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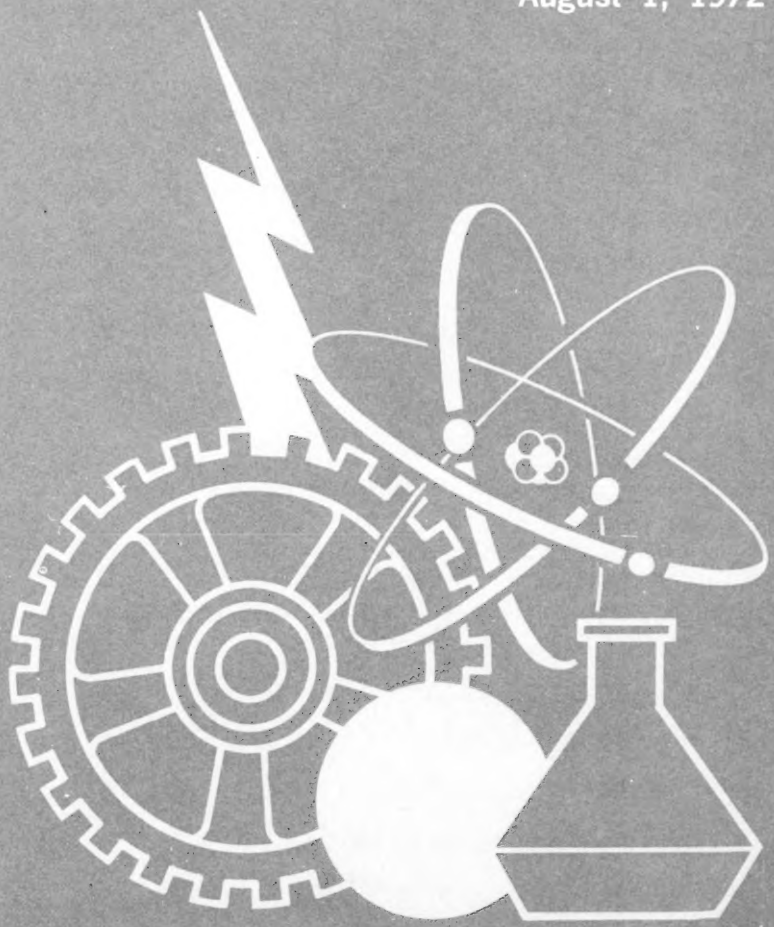
PATENTS

August 1, 1972



U. S. DEPARTMENT OF COMMERCE

Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

August 1, 1972 Volume 901 Number 1

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PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of June 1972

Examiner affirmed	143
Examiner affirmed in part	12
Examiner reversed	30
Total	185

Interference Practice

[37 CFR Parts 1, 5]

Notice of Proposed Rule Making

Notice is hereby given that, pursuant to the authority contained in section 6 of the A t of July 19, 1952 (66 Stat. 793; 36 U.S.C. 6) the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising §§ 1.225, 1.231 (a)(5) and (d), 1.251(a), 1.253(f), 1.272(c), 1.277(a), and 1.281, and revoking paragraph (b) of § 5.3.

All persons are invited to present their views, objections, recommendations or suggestions in connection with the proposed changes to the Commissioner of Patents, Washington, D.C. 20231 on or before October 10, 1972. No oral hearing will be held. Any written comments or suggestions may be inspected by any person, upon written request, a reasonable time after the closing date for submitting comments.

The proposed rule changes are intended to clarify the current practice before the Board of Interferences and to correct several inconsistencies.

In § 1.225, it is proposed that the 20-day period be changed to 30 days. It is also proposed that this rule be amended to make explicit the practice which has been in effect for a long time of treating oppositions to certain types of motions as entitling a junior party to a final hearing even though he would otherwise be subject to judgment on the record.

In § 1.231(a) a reference to paragraph (d) is proposed. It is proposed that a new sentence be added to § 1.231(d) which would defer to the final hearing consideration of motions for the conversion of inventorship filed during the testimony taking period.

It is proposed to amend § 1.251(a) to make it consistent with § 1.287(a).

Paragraph (f) of § 1.253 is proposed to be amended to specify that documentary exhibits should not be included in the bound volumes of testimony.

It is proposed that a reference to § 1.253(c) be added in the last sentence of § 1.272(c).

The proposed amendment of § 1.277(a) would not require consecutive numbering of all questions if paper with numbered lines is used.

The proposed amendment to § 1.281 would clearly indicate that statements may be either under oath or declaration.

The proposed revocation of paragraph (b) of § 5.3 would remove an obsolete procedure from the regulations. Under current practice, applications under secrecy order are not placed into interference until after the secrecy order is removed.

The text of the proposed amendment sections is as follows:

§ 1.225 *Failure of junior party to file statements or to overcome filing date of senior party.*

If a junior party to an interference fails to file a preliminary statement, or if his statement fails to overcome the prima facie case made by the filing date of the application of another party, judgment on the record will be entered against such junior party unless he has filed a motion under § 1.231, within the time set for such motions, for some action in the interference or he has opposed a motion under § 1.231(a) (2), (3), (4), or (5). If such a motion has been timely filed but does not result in action in the interference which will remove the basis for a judgment on the record, such judgment on the record will be entered unless the motion related to matters which may be reviewed at final hearing under § 1.258, and within 30 days of the decision disposing of the motion the junior party concerned requests that final hearing be set to review such matters. Also, such a junior party may within such 30-day period request a final hearing to review such a matter raised by his opposition to a motion under § 1.231(a) (2), (3), or (4) which was granted over his opposition.

§ 1.231 *Motions before the primary examiner.*

(a) * * *

(5) To amend an involved application by adding or removing the names of one or more inventors as provided in § 1.45. (See paragraph (d) of this section.)

* * * * *

(d) All proper motions as specified in paragraph (a) of this section, or of a similar character, will be transmitted to and considered by the primary examiner without oral argument, except that consideration of a motion to dissolve will be deferred to final hearing before a Board of Patent Interferences where the motion urges unpatentability of a count to one or more parties which would be reviewable at final hearing under § 1.258(a) and such unpatentability is urged against a patentee or has been ruled upon by the Board of Appeals or by a court in ex parte proceedings. Also consideration of a motion to add or remove the names of one or more inventors may be deferred to final hearing if such motion is filed after the times for taking testimony have been set. Requests for reconsideration will not be entertained.

* * * * *

§ 1.251. *Assignment of times for discovery and taking testimony.*

(a) A period for preparation for testimony will be set in which all parties should complete discovery and other preparatory activities, except for service by the senior party required by § 1.287(a)(1) which is governed by § 1.287(a)(2)(iii).

* * * * *

§ 1.253 *Copies of the testimony.*

* * * * *

(f) When the copies of the record are in typewritten form, they must be clearly legible on opaque unglazed, durable paper approximately 8½ by 11 inches in size (letter size) and one of the three copies must be a ribbon copy, but need not be executed by the certifying officer. (The certified transcript may be a properly executed carbon copy. See § 1.277.) The typing shall be on one side of the paper, in not smaller than pica type; and double-spaced with a margin of 1½ inches on the left-hand side of the page. The sheets shall be bound at their left edges, in such manner to lie flat when opened, in a volume or volumes of convenient size (approximately 100 pages per volume is suggested) provided with covers. Documentary exhibits should not be included in bound volumes of testimony. Multigraphed or otherwise reproduced copies conforming to the standards specified will be accepted.

* * * * *

§ 1.272 *Manner of taking testimony of witnesses.*

* * * * *

(c) By agreement of the parties, the testimony of any witness or witnesses of any party, may be submitted in the form of an affidavit by such witness or witnesses. The parties may stipulate what a particular witness would testify to if called, or the facts in the case of any party may be stipulated. When evidence is submitted in one of these forms, four copies of such affidavit or stipulated testimony (§ 1.253 (a), (c), (f)) are required.

§ 1.277 *Form of deposition.*

(a) The testimony must be written on letter size paper, with a wide margin on the left-hand side of the page, and with the writing on one side only of the sheet. The pages must be serially numbered throughout the entire record for each party (§ 1.253(c)) and the name of the witness must be plainly and conspicuously written at the top of each page. The questions propounded to each witness must be consecu-

tively numbered, unless paper with numbered lines is used, and each question must be followed by its answer.

* * * * *

§ 1.281 *Additional time for taking testimony.*

If either party has proceeded with the taking of testimony on his behalf but is unable to complete his case because of inability to procure the testimony of a witness or witnesses within the time limited and said time has expired, and he desires additional time for such purpose, he must file a motion, accompanied by a statement under oath or in the form of a declaration setting forth specifically the cause of such inability, the name or names of the witness or witnesses, the fact expected to be proved by such witness or witnesses, the steps which have been taken to procure such testimony, and the dates on which efforts have been made to procure it. (See § 1.245 for extensions of time in other situations.)

§ 5.3 [*Amended*]

In § 5.3, it is proposed that paragraph (b) be revoked.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved: June 16, 1972.

JAMES H. WAKELIN, Jr.,
Assistant Secretary
for Science and Technology.

[FR Doc. 72-9990 Filed 6-29-72; 8:54 am]

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,129,382, D. Mastini, TELEPHONE SYSTEM, filed July 21, 1971, D.C. Md. (Baltimore), Doc. 71-787-N, *Domenico Mastini* v. *American Telephone & Telegraph Company and International Telephone & Telegraph Company.* Decision of the court dismissing complaint as to both defendants with prejudice, Mar. 10, 1972.

2,742,378, T. A. Te Grothenhuis, FILLERS HAVING VINYL SILOXANE GROUPS BONDED TO THE SURFACE THEREOF AND COPLOYMERS THEREOF WITH ETHYLENICALLY UNSATURATED POLYMERIZABLE MONOMERS, filed Oct. 25, 1967, D.C., N.D. Ohio (Cleveland), Doc. C67-774, *Westwood Chemical* v. *Certain-Teed Products Corp.* Order dismissing complaint at plaintiff's costs, Mar. 20, 1972.

3,223,252, C. A. Mikus, TREATMENT OF GLASS; 3,223,501, Fredley and Sleighter, METHOD AND APPARATUS FOR TREATING GLASS ON A PRESSURIZED FLUID BED; 3,293,015, same, METHOD AND APPARATUS FOR TEMPERING GLASS SHEETS ON A GAS SUPPORT BED; 3,497,340, Dennison and Rigby, METHOD OF TEMPERING AND RESHAPING GLASS SHEETS; 3,526,490, G. W. Misson, METHOD OF BENDING GLASS ON FLUID SUPPORT; 3,281,229, H. A. McMaster, THERMALLY COMPENSATED BED FOR SUPPORTING GLASS SHEETS; 3,282,447, same, CONVEYING APPARATUS; 3,291,590, same, APPARATUS FOR BENDING GLASS SHEETS; 3,332,759, McMaster and Nitschke, METHOD OF AND APPARATUS FOR MANUFACTURING GLASS SHEETS ON A GAS SUPPORT BED; 3,332,760, McMaster and Van Zee, APPARATUS PROVIDING A GASEOUS SUPPORT BED AND METHOD FOR TREATING GLASS OR THE LIKE THEREON; 3,332,762, McMaster and Nitschke, METHOD OF AND APPARATUS FOR HEAT TREATING GLASS SHEETS ON A GAS SUPPORT BED; 3,338,697, same, GASEOUS SUPPORT BED FOR CONVEYING AND HEAT TREATING GLASS SHEETS; 3,399,042, same, METHOD AND APPARATUS FOR CONVEYING AND HEAT TREATING GLASS SHEETS OVER A GAS SUPPORT BED; 3,402,036, D. H. McMaster, METHOD AND APPARATUS FOR CONVEYING AND CURVING GLASS SHEET MATERIAL ON A GAS SUPPORT BED, filed Mar. 7, 1972, D.C., N.D. Ohio (Toledo), Doc. C-72-71, *PPG Industries, Inc.* v. *Guardian Industries Corporation.*

3,223,501. (See 3,223,252.)

3,264,511. (See 3,476,970.)

3,281,229. (See 3,223,252.)

3,282,447. (See 3,223,252.)

3,291,590. (See 3,223,252.)

3,293,015. (See 3,223,252.)

3,332,759. (See 3,223,252.)

3,332,760. (See 3,223,252.)

3,332,762. (See 3,223,252.)

3,338,697. (See 3,223,252.)

3,342,151, R. B. Howell, UNIVERSAL PRESSER FOOT ATTACHMENT; 3,349,736, same, ZIPPER FOOT ATTACHMENTS; 3,473,498, same, filed Mar. 13, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c648, *Robert B. Howell, Unique Zipper Distributing Co., Div. American Can Co.* v. *Donahue Sales et al.*

3,349,736. (See 3,342,151.)

3,368,432. (See 3,555,939.)

3,399,042. (See 3,223,252.)

3,399,340, A. F. Podell, TRANSFORMER FOR HIGH FREQUENCY CURRENTS; 3,426,298, Sontheimer and Fredrick, BROADBAND DIRECTIONAL COUPLER; 3,428,920, J. Oleksiak, N-WAY ELECTRICAL POWER DIVIDER WHEREIN N IS AN ODD NUMBER, filed Mar. 16, 1972, D.C.N.H. (Concord), Doc. C-72-71, *Adams-Russell Co., Inc.* v. *Technical Research and Manufacturing, Inc., Anthony V. Tirolla, and Arthur F. Marin.*

3,402,036. (See 3,223,252.)

3,412,062, Johnson, Phillips and Watt, PRODUCTION OF CARBON FIBRES AND COMPOSITIONS CONTAINING SAID FIBRES, filed Mar. 15, 1972, D.C. Del. (Wilmington), Doc. 4347, *National Research Development Corporation* v. *Great Lakes Carbon Corporation and Great Lakes Research Corporation.*

3,426,298. (See 3,399,340.)

3,428,920. (See 3,399,340.)

3,443,628, I. A. Carr, PRESSURE DIECASTING APPARATUS AND METHOD; 3,534,802, same, PRESSURE DIE CASTING METHOD, filed Mar. 10, 1972, D.C. Mass. (Boston), Doc. 72-856-F, *Irving A. Carr* v. *Freedom Tool and Die Inc.*

3,459,199, J. F. Connell, TEASING AND UNSNARLING IMPLEMENT, filed Jan. 14, 1972, D.C., N.D. Ala. (Birmingham), Doc. 72-38-S, *Jerry F. Connell* v. *General Electric Co.*

3,473,498. (See 3,342,151.)

3,476,970, Gillies and Burger, HOLLOW CATHODE ELECTRON DISCHARGE DEVICE FOR GENERATING SPECTRAL RADIATION; 3,264,511, G. K. Yamasaki, GLOW DISCHARGE DEVICE, filed Mar. 15, 1972, D.C. Conn. (Bridgeport), Doc. B-466, *Westinghouse Electric Corporation* v. *Perkin-Elmer Corporation.*

3,497,340. (See 3,223,252.)

3,503,084. (See D. 216,525.)

3,524,301, D. D. Zimmerman, CUTOFF KNIFE FOR PACKAGING MACHINE; 3,546,849, same, PACKAGING MACHINERY, filed Dec. 23, 1971, D.C. Mass. (Boston), Doc. 71-3102-G, *Domain Industries, Inc.* v. *Package Machinery Company.*

3,526,490. (See 3,223,252.)

3,534,802. (See 3,443,628.)

3,546,849. (See 3,524,301.)

3,555,939, K. F. Halls, ADJUSTABLE OPEN END WRENCH; 3,368,432, same, SLIDING SIDE JAW WRENCH HAVING A PERFORATED DRIVE BELT, filed Mar. 14, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72-181-C, *Eugene E. Petersen* v. *Fee International, Ltd.*

3,581,650, F. J. McCabe, COMBINATION AIR DAMPER; D. 221,655, same, AIR DAMPER, filed Feb. 22, 1972, D.C., E.D. Pa. (Philadelphia), Doc. 72-368, *Francis J. McCabe* v. *Air Balance, Inc. and ABL Liquidating Company.*

D. 216,525, J. R. Meinwieser, CUSHION; 3,503,084, same, INFLATABLE CUSHION, filed Jan. 27, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c235, *Better Sleep Inc.* v. *Richard A. Meyer et al.*

D. 221,655. (See 3,581,650.)

Errata

In the OFFICIAL GAZETTE, vol. 895, Feb. 29, 1972, page 1611, paragraph 8, beginning with "2,942,429," should be deleted.

In the OFFICIAL GAZETTE, vol. 896, Mar. 21, 1972, page 826, paragraph 9, "3,122,484," should be *3,122,483*, and on same page, paragraph 8, "3,093,578" should be *3,093,528*.

Certificates of Correction for the Week of Aug. 1, 1972

Re. 27,328	3,610,299	3,636,119	3,650,438
3,392,728	3,610,464	3,636,157	3,650,490
3,412,139	3,613,975	3,636,166	3,650,708
3,499,892	3,614,534	3,636,270	3,650,745
3,529,349	3,614,645	3,636,279	3,650,780
3,536,424	3,615,464	3,636,337	3,650,803
3,552,191	3,615,618	3,636,832	3,650,807
3,575,236	3,615,624	3,637,493	3,650,900
3,575,984	3,615,634	3,637,565	3,650,904
3,576,178	3,617,001	3,637,732	3,651,017
3,576,865	3,617,641	3,638,440	3,651,123
3,579,359	3,617,861	3,638,480	3,651,340
3,582,300	3,619,082	3,638,709	3,651,361
3,583,799	3,619,489	3,639,315	3,651,424
3,584,095	3,620,730	3,639,674	3,651,461
3,584,146	3,622,294	3,639,813	3,651,492
3,584,443	3,622,295	3,639,863	3,651,575
3,585,280	3,623,359	3,639,876	3,651,633
3,588,432	3,623,963	3,641,004	3,652,175
3,588,658	3,624,257	3,641,080	3,652,291
3,590,161	3,624,848	3,641,081	3,652,501
3,590,883	3,625,694	3,641,110	3,652,606
3,594,492	3,625,762	3,641,169	3,652,855
3,596,141	3,625,874	3,641,761	3,652,956
3,596,760	3,626,603	3,641,872	3,653,156
3,597,200	3,627,683	3,642,129	3,653,360
3,598,886	3,627,774	3,642,446	3,653,429
3,598,977	3,627,882	3,642,709	3,653,746
3,599,704	3,627,970	3,642,994	3,653,794
3,599,867	3,628,943	3,643,864	3,653,989
3,601,103	3,630,655	3,643,915	3,654,075
3,601,959	3,631,063	3,644,243	3,654,132
3,602,236	3,631,902	3,644,342	3,654,235
3,603,249	3,632,424	3,644,557	3,654,359
3,603,305	3,632,425	3,644,653	3,654,400
3,603,309	3,632,565	3,645,914	3,654,880
3,603,874	3,632,836	3,646,057	3,654,929
3,604,192	3,632,980	3,646,208	3,655,070
3,604,736	3,633,333	3,646,223	3,655,238
3,604,750	3,634,099	3,646,541	3,655,946
3,605,038	3,634,143	3,646,653	3,657,149
3,605,466	3,634,301	3,646,976	3,657,183
3,606,345	3,634,479	3,647,459	3,657,386
3,607,071	3,634,623	3,647,510	3,657,766
3,607,630	3,634,654	3,647,699	3,658,662
3,608,278	3,634,667	3,647,776	3,659,153
3,608,386	3,635,644	3,647,812	3,659,199
3,608,415	3,635,783	3,647,838	3,661,247
3,609,537	3,635,806	3,648,227	3,661,439
3,609,555	3,635,830	3,648,229	3,661,774
3,609,596	3,635,971	3,648,692	3,661,957
3,609,654	3,636,009	3,649,661	3,663,216
3,609,757	3,639,102		

Corrected Disclaimer

3,130,559.—*Sterling Beckwith,* Libertyville Township, Ill. MULTIPLE JET CONDITIONING CABINET. Patent dated Apr. 28, 1964. Disclaimer filed Apr. 10, 1972, by the assignee, *Kysor Industrial Corporation.*

Hereby enters this disclaimer to claims 1, 2, 5 and 6 of said patent.

This disclaimer supersedes disclaimer issued June 6, 1972.

Disclaimers

3,422,834.—*Romano Garabello,* Brooklyn, N.Y. PLUNGER TYPE ADDITIVE INJECTION DEVICE. Patent dated Jan. 21, 1969. Disclaimer filed Feb. 9, 1972, by the assignee, *Metropolitan Petroleum Petrochemicals Co., Inc.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, and 5 of said patent.

3,425,435.—*Romano Garabello,* Brooklyn, N.Y. ROTARY OSCILLATING PISTON PUMP ADDITIVE INJECTION DEVICE FOR FLUID DELIVERY SYSTEM. Patent dated Feb. 4, 1969. Disclaimer filed Feb. 9, 1972, by the assignee, *Metropolitan Petroleum Petrochemicals, Co., Inc.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10 of said patent.

3,433,213.—*Herbert G. Huff,* Royal Oak, and *Donald J. Shelly,* Westland, Mich. SHUTTER FOR WINDOW IN OVEN DOOR. Patent dated Mar. 18, 1969. Disclaimer filed Nov. 18, 1971, by the assignee, *White Consolidated Industries, Inc.*

Hereby enters this disclaimer to claims 1 through 10 of said patent.

3,441,042.—*Sidney J. Reiser* and *Larry Reiser,* Rego Park, N.Y. LIQUID DELIVERY SYSTEM INCLUDING FLUID ADDITIVE INJECTOR. Patent dated Apr. 29, 1969. Disclaimer filed Feb. 9, 1972, by the assignee, *Metropolitan Petroleum Petrochemicals Co., Inc.*

Hereby enters this disclaimer to claims 1, 2, 5, and 6 of said patent.

3,452,789.—*Thomas E. Roberts, Jr.,* Saratoga, and *Ronald J. Billett,* Sunnyvale, Calif. MACHINE FOR DETECTING AND PATCHING DEFECTS IN PLYWOOD VENEER. Patent dated July 1, 1969. Disclaimer filed Feb. 14, 1972, by the assignee, *FMC Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to May 27, 1986.

3,452,791.—*Thomas E. Roberts, Jr.,* Saratoga, Calif. POSITIONING MECHANISM. Patent dated July 1, 1969. Disclaimer filed Feb. 14, 1972, by the assignee, *FMC Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to May 27, 1986.

3,475,350.—*Charles N. Winnick,* Teaneck, N.J., and *Anthony N. Naglieri,* New York, N.Y. AMMOXIDATION CATALYST. Patent dated Oct. 28, 1969. Disclaimer filed Mar. 27, 1972, by the assignee, *Halcon International, Inc.*

Hereby enters this disclaimer to each and every claim of said patent.

3,482,644.—*Herbert B. Krieger,* Port Jefferson Station, and *Kenneth A. Wilson,* Locust Valley, N.Y. STEERING CONTROL SYSTEM FOR UNMANNED VEHICLES. Patent dated Dec. 9, 1969. Disclaimer filed, Feb. 24, 1972, by the assignee, *Clark Equipment Company.*

Hereby enters this disclaimer to claim 1 of said patent.

Dedications

2,928,862.—*Joe R. Willard* and *John F. Henahan,* Middleport, N.Y. PESTICIDAL PHOSPHORUS ESTERS. Patent dated Mar. 15, 1960. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

3,542,964.—*Herbert G. Odom,* Oakland, Calif. TELEPHONE CALL FORWARDING METHOD AND APPARATUS. Patent dated Nov. 24, 1970. Dedication filed Jan. 3, 1972, by the assignee, *Ford Industries, Inc.*

Hereby dedicates to the Public the entire remaining portion of the term of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
Deputy Assistant Commissioner (Vacant)

CONDITION OF PATENT APPLICATIONS AS OF JULY 5, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-14-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocylic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-21-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-02-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-01-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	7-26-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-07-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	9-01-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-20-71
PHYSICS, GROUP 280—Director (Vacant). Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	5-05-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	2-05-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vechicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	7-16-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-02-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	7-16-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	6-01-71

Expiration of patents: The patents within the range of numbers indicated below expire during July 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,712,131 to 2,714,200, inclusive
Plant Patents..... Numbers 1,404 to 1,407, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED AUGUST 1, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T901,001
PROCESS FOR FACING A SPONGE RUBBER CARPET UNDERLAYMENT WITH A NONWOVEN FIBROUS SHEET

Brian R. Phillips and Richard D. Hutchins, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Original application Feb. 28, 1969, Ser. No. 803,425, now Patent No. 3,575,784, dated Apr. 20, 1971. Divided and this application Dec. 9, 1970, Ser. No. 96,635

Int. Cl. B32b *5/18*

U.S. Cl. 156—79

No Drawing. 16 Pages Specification

A method for the preparation of a faced sponge rubber carpet underlayment comprising forming a foamable and curable rubber layer, heating the rubber, laying a bonded nonwoven sheet of synthetic organic fibers flat atop the hot layer of rubber at a temperature in the range of about 90 and 150° C. but below that or equal to the temperature at which the fabric exhibits maximum shrinkage, and then heating the combination to a temperature in the range of about 170 to 190° C. to effect foaming and curing of the rubber as well as adhesion of the rubber to the fabric, the said fabric having a net irreversible thermal shrinkage in the lengthwise and widthwise directions of between about 1.2 and 5% when heated to about 170° C. and subsequently cooled.

T901,002
THERMOFORMED PACKAGES

Richard G. Gelak, Cherry Hill, and Vero Ricci, Collingswood, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of abandoned application Ser. No. 852,178, Aug. 22, 1969. This application Jan. 13, 1971, Ser. No. 106,241

Int. Cl. B65d *85/00*

U.S. Cl. 206—46 FC

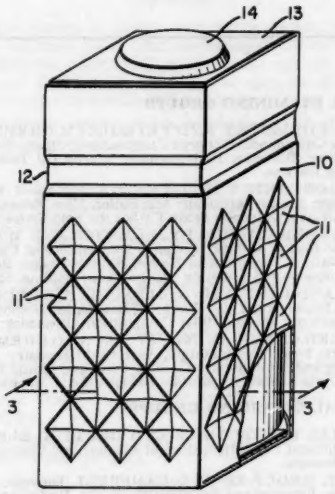
3 Sheets Drawing. 8 Pages Specification

A thermoplastic carton blank having at least one surface thermoformed, preferably the top or bottom, to conform to the contours of the article to be packaged in the carton made from the blank. The carton blank is scored, creased and then folded into a carton particularly useful in packaging articles that could be broken or marred in the absence of an outer wrap such as glass container, breakable plastics, polished metal, ceramic metals, delicate instruments and the like. The thermoformed portion of the surface of the carton assists in restraining movements of the packaged article and the thermoplastic material cushions the article.

The thermoplastic material preferably is a laminate of

(a) a core of oriented closed cell foam having an elongation of less than about 50% and consisting essentially of styrene polymer having a tensile modulus greater than 150,000 p.s.i., and

(b) bonded to both sides of the core is a thermoplastic film having a tensile modulus greater than 150,000, a percent elongation at break greater than the function $t \div R$ where t is the thickness of the film and R is the radius of a creasing edge when the carton blank is



folded and is thermoformable within a temperature range of about 50° to 230° C.

T901,003
CARPET CONSTRUCTION HAVING HIGH RESISTANCE TO PROPAGATION OF FLAMING ON CONTACT WITH INCANDESCENT OR BURNING BODIES

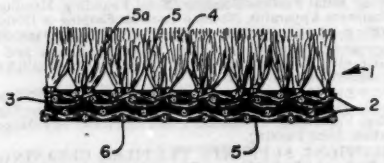
James W. Henry, 3958 Skyland Drive 37664, and Clarence C. Dannelly, Rte. 8 37462, both of Kingsport, Tenn.

Filed Mar. 10, 1971, Ser. No. 122,850

Int. Cl. D03d *27/00*

U.S. Cl. 161—66

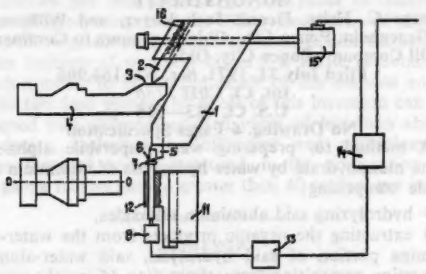
1 Sheet Drawing. 19 Pages Specification



Propagation of flaming or burning of horizontally disposed carpet or rug construction composed of a jute or other backing fabric having synthetic or natural fibers tufted thereinto is substantially reduced by either (1) impregnating the jute backing with a layer of a high melting heat-absorbing thermoplastic material having a relatively high ignition temperature (compared to the ignition temperature of the tufted fibers), such as latex, cellulose ester, polyester, polypropylene, or the like, to such

an extent or in such an amount that the thermoplastic material penetrates the backing fabric and forms a thin heat-absorbing surface layer or barrier on the upper surface of the backing and in intimate and heat-conducting contact with the tufts of the rug or carpet, or (2) laminating a sheet or layer of such thermoplastic material on the upper surface of the backing fabric and thereafter weaving or punching the tufts into and through the laminated structure whereby they will be in intimate heat-conducting and heat-absorbing contact with the thermoplastic layer.

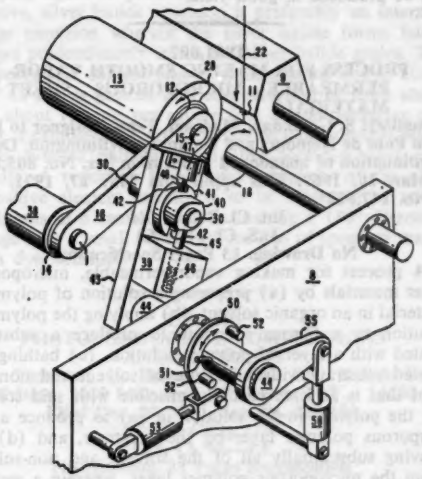
T901,004
DEVICE FOR POSITIONING A CUTTING EDGE OF A CUTTING TOOL ON A MACHINE TOOL
Ernest Schmid, Marin-Epagnier, Switzerland, assignor to Edouard Dubied & Cie Societe Anonyme
Continuation of application Ser. No. 800,929, Feb. 20, 1969. This application Mar. 24, 1971, Ser. No. 127,804
Claims priority, application Switzerland, Feb. 28, 1968, 2,913/68
Int. Cl. B23b *3/28*
U.S. Cl. 82—14 D
2 Sheets Drawing. 6 Pages Specification



A positioning device is disclosed for positioning a cutting tool at a predetermined position relative to a reference template. The cutting tool is rigidly mounted on a tool slide which constitutes part of a copying lathe. A feeler is positioned to contact the reference template and is mounted on the tool slide for movement relative thereto in such a manner that both the tool slide and the cutting tool may be moved as a unit relative to the feeler. The positioning device comprises a movable sensor disposed in opposed, spaced-apart relationship to the cutting tool when the feeler is in contact with the reference template and a control circuit responsive to the movement of the sensor to effect movement of the tool slide. The control circuit comprises a switch actuated in response to movement of the sensor to provide an electric signal, a comparator for comparing the electrical signal with a reference signal indicative of the correct cutting tool position and providing a corresponding control signal, and a motor responsive to the control signal to effect movement of the tool slide thereby accurately positioning the cutting tool.

T901,005
APPARATUS FOR WINDING YARN
Bernard Franklin Shelley, 207½ Matthes Ave. 19804, and William David Walker, 2328 Kennwynn Road 19803, both of Wilmington, Del.
Filed Mar. 31, 1971, Ser. No. 129,820
Int. Cl. B65h *54/02*
U.S. Cl. 242—18 A
4 Sheets Drawing. 10 Pages Specification

A yarn winding apparatus of the type that provides for automatically transferring winding action from a full to an empty yarn package support without waste is modified by the addition of a device to provide storage and release of mechanical torque to assist in rotating a pivotally mounted arm carrying the package supports. The winding apparatus includes a frame, a pair of package supports alternately movable into surface driven engagement with a drive roll and an arm pivotally mounted between its ends to a linkage mechanism connected to



the frame. The supports are carried by chucks rotatably mounted at opposite ends of the arm. A cam keyed to the arm at its pivot point engages a spring-backed cam follower mounted to the linkage mechanism for storing and transmitting mechanical torque to assist in pivoting the arm.

T901,006
PREPARATION OF DIALKYL XANTHOGEN DISULFIDES
Leo Ojakaar, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 23, 1971, Ser. No. 137,056
Int. Cl. C07c *154/02*
U.S. Cl. 260—455 B
No Drawing. 11 Pages Specification

According to this invention there is provided a process for preparing dialkyl xanthogen disulfides in good yield and high purity by contacting at a temperature in the range of about 15–30° C. a gas stream containing about 6–16% chlorine gas by volume, and an alkaline aqueous solution of an alkali metal salt of an alkyl xanthic acid and an alkyl in which the alkyl radical corresponds to that of the alkyl xanthic acid salt, the molar ratio of alcohol to xanthic acid salt being at least about 0.5:1 and the pH of the solution being about 10 or higher. The alkyl radicals in the alkyl xanthic acid have one to eight carbon atoms. The preferred molar proportions are 0.9 to 1.1 mole of alcohol per mole of xanthate.

Dialkyl xanthogen disulfides can be produced by a continuous two-step process, e.g. by (1) reacting the alcohol with carbon disulfide in the presence of an alkali metal hydroxide to produce the metal salt of the xanthic acid, then (2) oxidizing the metal salt of the xanthic acid with chlorine to the disulfide. Alternatively, the disulfide can be prepared as in step (2) using a xanthic acid metal salt produced by any one of several known methods. With

the continuous two-step process, the excess alcohol necessary for the process of this invention can be present in step (1) or may be added by step (2).

The chlorine which is added in diluted form in a stream of an inert gas such as air or oxygen, should be introdouced into the liquid reaction mixture below the surface to avoid local concentrations of chlorine.

By the process of this invention diethyl xanthogen disulfide having a freezing point of about 26° C. or higher can be produced in good yield.

T901,007

PROCESS FOR MAKING SMOOTH VAPOR-PERMEABLE MICROPOROUS SHEET MATERIALS

Tirunillayi S. Govindan, Madison, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of abandoned application Ser. No. 805,880, Mar. 10, 1969. This application May 27, 1971, Ser. No. 147,628

Int. Cl. B44d *1/44*

U.S. Cl. 117—63

No Drawing. 13 Pages Specification

A process for making vapor-permeable, microporous sheet materials by (a) preparing a solution of polymeric material in an organic solvent, (b) applying the polymeric solution to a fibrous substrate to produce a substrate coated with a layer of polymer solution, (c) bathing the coated substrate with a mixture of solvent and non-solvent that is at least partially miscible with said solvent for the polymer in the solution in (a) to produce a microporous polymer layer on the substrate, and (d) removing substantially all of the solvent and non-solvent from the microporous polymer layer, wherein a wetting liquid is applied to the substrate side of the coated substrate during the bathing step (c). The substrate is typically a non-woven fabric containing a solidified polymeric impregnant having a porous moisture-permeable structure. The wetting solution is water or an aqueous solution with a water miscible organic solvent preferably with a wetting agent selected from the group consisting of alkyl phenoxy-polyethoxy alcohols, sodium N-methyl-N-oleoyl taurate, polyethylene oxy-derivatives and polyoxyethylated alcohols. The polymer solution is preferably a dispersion of a mixture of polyurethane and polyvinyl chloride.

T901,008

ELECTRON BEAM RECORDING PHOTOGRAPHIC MATERIAL

Raymond F. Reithel, Kodak Park Works, 2000 Lake Ave., Rochester, N.Y. 14615

Filed May 28, 1971, Ser. No. 148,137

Int. Cl. G03c *1/76*

U.S. Cl. 96—67

No Drawing. 9 Pages Specification

The recording material includes a support such as paper or polymeric photographic supports carrying a layer of metallic conducting material, e.g. aluminum or nickel and coated thereon a mixture of bivalent ions, such as provided by zinc acetate, and a tetrazolium salt. The metallic layer catalyzes the formation of a formazan dye image upon exposure of the element to an electron beam including laser beams so an image is obtained having higher density than obtainable in absence of the metallic conducting layer and bivalent ions. The rate of formation of the dye enhancement is accelerated by heat. In one example, an aluminum coated polyester support is coated with a mixture of a polyamide binder, zinc acetate and 2,3,5-triphenyl-2H-tetrazolium chloride. An image is obtained by exposure to a 15 kv., 50 na. electron gun source using about 1.6×10^{-9} coulombs current exposure and post-exposure processing at 150° C. for 5 seconds. The above subject matter may be embodied in patent applications pending in foreign countries.

T901,009

HERBICIDAL COMBINATIONS

Cecil W. Le Fevre, Franklin, Idaho, and Vlady Regentik, Buena Park, Vernon W. Woestemeyer, Yorba Linda, and William G. Woods, Fullerton, Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed June 21, 1971, Ser. No. 155,276

Int. Cl. A01n *9/02*

U.S. Cl. 71—121

No Drawing. 13 Pages Specification

Combinations of substituted 2,4-dinitro - 6 - trifluoromethyl-1,3-phenylenediamine compounds with other herbicidally active compounds, such as substituted ureas, triazines, carbamates, uracils, anilides, amides and benzimidazoles, as well as the halophenoxyaliphatic acids, benzoic acids, nitrophenols, chlorofluorenol derivatives, dipyridylium derivatives, halogenated alkanoic acids and inorganic herbicides. The combinations with substituted ureas, carbamates, halobenzoic acids and nitrophenols are particularly preferred because of a synergistic herbicidal activity.

T901,010

WATER-DISPERSIBLE ALPHA-ALUMINA MONOHYDRATE

George G. Hritz, Dennis Jack Royer, and William C. Ziegenhain, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed July 21, 1971, Ser. No. 164,906

Int. Cl. C01f *7/36*

U.S. Cl. 423—626

No Drawing. 6 Pages Specification

A method for preparing water-dispersbile alpha-alumina monohydrate by water hydrolysis of aluminum alkoxide comprising:

(a) hydrolyzing said aluminum alkoxides,

(b) extracting the organic products from the water-alumina portion of said hydrolysis, said water-alumina portion comprising from about 1 to 16 weight percent Al_2O_3,

(c) adjusting the pH of the water-aluminum portion to about 0.5 to about 5.0 by the addition of acid and

(d) spray drying the acidic alumina-water mixture.

T901,011

COLORLESS POLYAMIDE COMPOSITIONS AND SHAPED ARTICLES STABILIZED FOR WEATHERABILITY

Roy Calvin Timmer, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 12,125, Feb. 17, 1970. This application Aug. 5, 1971, Ser. No. 169,486

Int. Cl. C08g *22/10*

U.S. Cl. 260—18 N

No Drawing. 10 Pages Specification

A composition containing 0.01 to 0.3 percent by weight copper stearate, 0.004 to 0.11 percent by weight manganous hypophosphite, 0.1 to 5 percent by weight potassium iodide and a complemental amount of a polyamide containing 75 to 100 percent by weight hexamethylene adipamide polymerized units and 0 to 25 percent by weight caprolactam polymerized units, and shaped articles such as monofilaments made therefrom.

T901,012

CONCENTRATION OF ANIMAL-DERIVED MILK CLOTTING ENZYMES BY REVERSE OSMOSIS

John H. Nelson, Waukesha, Wis., assignor to Dairyland Food Laboratories, Inc., Waukesha, Wis.

Continuation of application Ser. No. 842,694, July 17, 1969. This application Aug. 31, 1971, Ser. No. 176,746

Int. Cl. C07g *7/02, 7/026*

U.S. Cl. 195—66 R

No Drawing. 12 Pages Specification

The rate and efficacy of extraction of milk clotting enzymes from animal tissue is improved by contacting

the animal tissue in an extraction zone with a brine solution containing about 2 to 10 weight percent salt, removing an effluent containing extracted milk enzyme from the extraction zone, separating the milk clotting enzymes from the removed effluent by passing it through a high pressure reverse osmosis zone which includes a membrane capable of passing salt and water while retaining the milk clotting enzymes, removing the concentrate containing the milk clotting enzymes from the reverse osmosis zone, removing the permeate containing salt and water from the reverse osmosis zone, adjusting the salt concentration in the permeate, and recycling the thus-adjusted permeate to the extraction zone.

T901,013
FABRIC KNITTED OF DIFFERENT COLOR YARNS

Joseph Whitton Gibson, Jr., 1215 Hillside Blvd., Carrcroft, Wilmington, Del. 19803

Filed Nov. 3, 1971, Ser. No. 195,135
Int. Cl. D04b *1/26*
U.S. Cl. 66—169
No Drawing. 6 Pages Specification

A knitted fabric of plain stitch construction of at least 40 courses per inch consists of two yarns of different color in alternating courses. When two yarns of different color, e.g., differing in hue are used in alternate feeds in the knitting of seamless hosiery, a fabric is obtained which appears to be a solid shade of the blended color of the two feed yarns. The effect of this invention can be achieved with different colored yarns of less than about 60 denier, including monofilament and multifilament yarns, textured and nontextured, in the preparation of fine gauge fabrics having greater than 40 courses per inch.

T901,014

WITHDRAWN

T901,015
PHOTOSENSITIVE ELEMENTS FOR COLOR DIFFUSION TRANSFER SYSTEMS HAVING REDUCED PRESSURE SENSITIVITY

Edward J. Seus, Kodak Park Works, Rochester, N.Y. 14650

Filed Jan. 12, 1972, Ser. No. 217,266
Int. Cl. G03c *1/40, 5/54*
U.S. Cl. 96—77
No Drawing. 13 Pages Specification

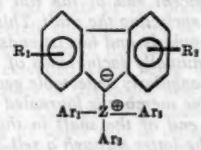
The pressure sensitivity of a color diffusion transfer system employing direct-positive, silver halide emulsions is reduced by adding to at least one of the silver halide emulsion layers prior to coating, a dispersion of a substantially water-insoluble, high boiling, nonpolymeric material generally known as a coupler solvent in a hydrophilic colloid such as gelatin. The dye image-providing material is preferably a "Fischer-type" nondiffusible coupler having an acidic solubilizing group thereon such as a sulfonic acid group, the coupler being capable of reacting with oxidized aromatic primary amino color developing agent to produce a diffusible dye. The direct-positive, silver halide emulsion is preferably an internal-image emulsion wherein the silver halide forms latent images predominantly inside the silver halide grains. The nonpolymeric solvent has a boiling point above about 175° C. and is present at a concentration of from about 5 to about 150 mg. per square foot of photosensitive element. Examples of such materials include tricresyl phosphate, n-butyl phthalate and ethyl-N,N-di-n-butyl carbamate. A reduction in pressure sensitivity of the photosensitive element enables it to be subjected to stress conditions in a camera such as making a 180° direction change over a small roller without loss of speed or maximum dye densities.

T901,016
PHOTOCONDUCTIVE COMPOSITIONS AND ELEMENTS

Rein Virkhaus, % Eastman Kodak Co., Kodak Park Division, 1669 Lake Ave., Rochester, N.Y. 14650

Filed Dec. 20, 1971, Ser. No. 210,129
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.5
No Drawing. 21 Pages Specification

Photoconductive ylid compounds having the formula:



wherein R_1 and R_2 are each an alkyl radical, an alkoxy radical, an aryl radical, a cyano radical, a halogen atom or a hydrogen atom; Ar_1, Ar_2 and Ar_3 are each aryl radicals; and Z is a Group V*a* element, are useful in electrographic elements. Useful elements are comprised of a conductive support having thereon a layer of a photoconductive composition comprised of an electrically insulating, film-forming organic binder and an ylid compound of the above formula.

REISSUES

AUGUST 1, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

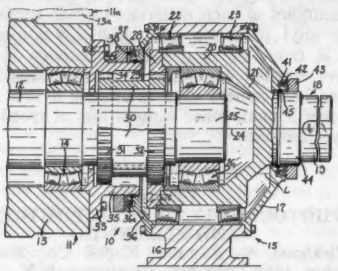
27,445
DRIVE FOR SHELL TYPE ROLLS

Howard E. Kuehn, Orange, Conn., assignor to USM Corporation, Boston, Mass.

Original No. 3,290,897, dated Dec. 13, 1966, Ser. No. 458,996, May 26, 1965. Application for reissue May 16, 1967, Ser. No. 637,543

Int. Cl. B21b *13/02*

U.S. Cl. 29—116 2 Claims



A pressure rolling roll shell is rotatably mounted on a non-rotatable shaft and this roll can be rotated by a rotatable cup shaped drive member within which one end of the shaft projects, this drive member being connected to the adjacent end of the roll by a sleeve-like coupling member encircling the shaft. This coupling member can deflect angularly and has its ends connected non-rotatably to the mutually facing ends of the roll and the drive member by angularly deflectable gear elements. The outside of the drive member is journaled on a supporting pedestal and the end of the shaft in this drive member is supported by the latter through a self-aligning bearing.

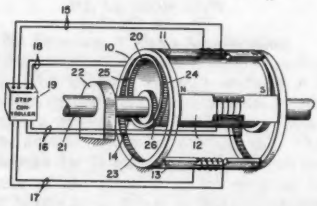
27,446
MOTOR WITH GYRATING ROTOR

Elvin C. Welch, 9905 W. Jefferson Blvd., Culver City, Calif. 90230

Original No. 3,452,227, dated June 24, 1969, Ser. No. 588,497, Oct. 21, 1966. Application for reissue June 7, 1971, Ser. No. 150,493

Int. Cl. H02k *37/00*

U.S. Cl. 310—49 10 Claims



[This disclosure relates to a new type of] *A* stepper motor [wherein there is provided] *having* a stator with a rotor eccentrically positioned in the stator for rolling movement about the interior of the stator such that the axis of the rotor revolves about the axis of the stator in one direction. An output shaft is provided with an output ring preferably having gear teeth and concentrically positioned within the stator with its periphery in engagement with the periphery of the gyrating rotor. The diameter of the rotor is intermediate the inside diameter of the stator and the diameter of the output shaft ring so that the output shaft ring will engage an inside surface of the rotor and will be caused to rotate upon gyrating movement of the rotor. The rotor itself is maintained in rolling engagement with the interior of the stator by the magnetic attraction or repulsion produced by suitable stator field windings and pole pieces which would function to provide a rotating magnetic field in the manner similar to conventional stepper motor stator fields. Gear teeth may be provided between the engaged rolling portions to prevent slippage. The relative diameters of the stator, rotor, and output shaft ring are adjusted to provide a desired incremental step or shaft rotation for a given degree of rotation of the stator field.

27,447
PROCESS OF USING A LOW CARBON STEEL COMPOSITION IN A CONTINUOUS CASTING PROCESS

John H. Richards, Penn Hills Township, Pa., assignor to United States Steel Corporation

No Drawing. Original No. 3,412,781, dated Nov. 26, 1968, Ser. No. 489,060, Sept. 21, 1965. Application for reissue July 13, 1970, Ser. No. 54,669

Int. Cl. B23k *19/00*

U.S. Cl. 29—527.7 8 Claims

A process of using a low carbon steel composition in a method for the continuous casting of steel which comprises introducing to a casting mold a steel whose composition is adjusted to contain 0.01 to 0.08% carbon, 0.20 to 0.60% manganese, 0.03 to 0.08% silicon, not over 0.015% aluminum, and the balance essentially iron and incidental impurities and continuously casting same.

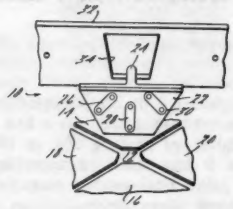
27,448
SINGLE PLANE ELECTRIC REVERSING SWITCH FOR MOTOR OPERATION CONTROL

William W. Chirota, Dearborn, Carl G. Rigge, Dearborn Heights, and Thomas Shewchuck, Dearborn, Mich., by Ford Motor Company, Dearborn, Mich., assignee

Original No. 3,564,181, dated Feb. 16, 1971, Ser. No. 816,253, Apr. 15, 1969. Application for reissue Nov. 19, 1971, Ser. No. 200,567

Int. Cl. H01h *1/36, 15/00*

U.S. Cl. 200—1 V 2 Claims



An electric switch having a substantially planar configuration and adapted to interconnect a current source and a reversible electric motor for multidirectional motor operation and to electrically connect the motor for dynamic braking upon the cessation of current flow to the motor. Flat conductors connected to the current source and motor converge upon and are uniquely arranged about a point on a circuit board. Plural conductive bridging elements mounted on a manually movable switch actuator are movable to plural switch positions in intimate contact with the

conductors to effect desired electrical interconnection of the conductors.

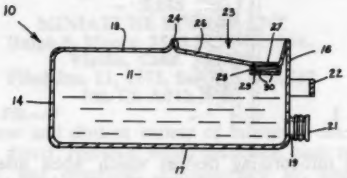
27,449
DRIP RECEPTACLE AND METHOD OF USING THE SAME

Richard O. Bartz, 7017 Mark Terrace Drive, Edina, Minn. 55435

Original No. 3,410,438, dated Nov. 12, 1968, Ser. No. 498,489, Oct. 20, 1965. Application for reissue Aug. 17, 1970, Ser. No. 64,330

Int. Cl. B65b *1/04, 3/04*

U.S. Cl. 141—1 10 Claims



A container for collecting and storing liquid having a flat bottom and a flat lower end wall for selectively supporting the container in prone and erect positions. A funnel-shaped section formed in the upper end of the top wall has a downwardly directed tubular threaded extension located contiguous to the upper end of the wall. The extension has a passage opened into the container adapted to be closed with a thread cap. An outwardly directed ridge surrounds the funnel-shaped section. The upper end wall has a handle and a normally closed drain opening.

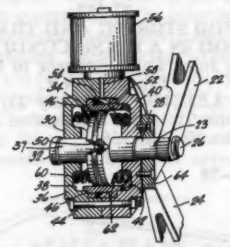
27,450
TORQUE LINKAGE DAMPER

Wilfred E. Boehringer, Fullerton, and Louis T. Kramer and Jane Little, Long Beach, Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Original No. 3,499,621, dated Mar. 10, 1970, Ser. No. 665,787, Sept. 6, 1967. Application for reissue Oct. 30, 1970, Ser. No. 85,833

Int. Cl. B64c *25/50*

U.S. Cl. 244—103 R 2 Claims



An aircraft landing gear damping mechanism which operates directly in conjunction with the landing gear torque linkage and combines the functions of a hydraulic damper and a spring type of damper.

27,451
POLYOLEFINS STABILIZED WITH SUBSTITUTED INDOLES

Ralph Holm Hansen, Short Hills, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

No Drawing. Original No. 3,454,524, dated July 8, 1969, Ser. No. 690,419, Dec. 14, 1967. Application for reissue Feb. 11, 1971, Ser. No. 114,738

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.8 N 3 Claims

Oxidative degradation in polymeric hydrocarbon materials such as polyethylene and polypropylene is retarded by [substituted indoles] *certain nitrogen-containing heterocyclic compounds* which heretofore have not been known to have antioxidant properties.

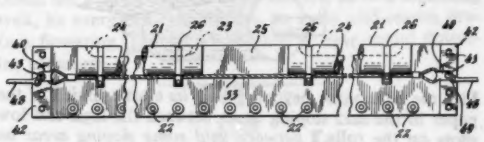
27,452
FLOATING BOOMS

Millard F. Smith, Westport, Conn. (P.O. Box 295, Saugatuck, Conn. 06880)

Original No. 3,499,290, dated Mar. 10, 1970, Ser. No. 739,452, June 24, 1968. Application for reissue Apr. 8, 1971, Ser. No. 132,345

Int. Cl. E02b *3/04, 15/04*

U.S. Cl. 61—1 F 15 Claims



A portable flexible floating boom for confining oil or other material floating on the water, or as a current or wave controlling or inhibiting breakwater, groin, jetty, or the like, or for protecting beaches from harmful marine creatures, the boom incorporating a series of elongated floats of foamed elastomer connected in longitudinally spaced end-to-end relation by a continuous underwater barrier in the form of a water-impervious flexible polymer fin depending from and supported by the floats substantially in the central longitudinal vertical plane of the floats, the barrier being extended at its ends beyond the two end floats of the boom and having end plates secured thereto for connection of towing or anchoring lines, the upper edge of the barrier between the floats and along its extended ends being substantially level with the upper sides of the floats, and each of the floats having a series of longitudinally spaced yoke-like metal straps embracing its upper side in imbedded non-projecting snag-proof relation, the sides of the straps converging beneath the floats with their ends clamped upon opposite sides of the barrier fin, whereby the barrier fin is supported by the straps in suspended relation beneath the floats. A reinforcing cable extends the length of the boom at one side of the barrier fin adjacent the undersides of the floats and is anchored at its ends to the end plates, supporting clips being swaged to grip the cable in correspondingly spaced relation to the longitudinal spacing of the barrier fin supporting straps along the boom, each clip being clamped between one side of the barrier and one end of each respective strap. It is also contemplated that an auxiliary barrier, which may be in the form of a water-pervious net or the like of suitable extent may be suspended from the cable to extend to any desired depth in the water below the water-impervious barrier fin.

27,453
ABSORBENT PAPER INDUSTRIAL WIPER OR TOWEL

Richard W. Schutte, Kenneth W. Britt, and Albert L. McConnell, by Scott Paper Co., assignee

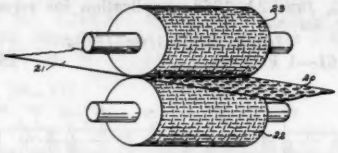
Original No. 2,834,809, dated May 13, 1958, Ser. No. 366,108, July 6, 1953. Application for reissue May 28, 1971, Ser. No. 147,850

Int. Cl. D21b *5/00;* D21f *11/00, 13/00*

U.S. Cl. 162—117 7 Claims

2. The method of forming bulky *and absorbent* paper *wipers or towels* from *creped paper* base stock which method comprises [supporting] *utilizing* two rolls having *formed thereon* substantially identical patterns [including high and low areas formed thereon] *of alternating projections and depressions, supporting said rolls for rotation* in juxtaposition so that the [high areas on one roll]

projections on one roll extend into the [low areas] *depressions* on the other roll and so that the distance between the surfaces of the rolls is less than the thickness of the base stock only in *at least some of* the sloping areas intervening the [high and low spots] *projections and depressions* on each roll, [and] *continuously* passing the base stock between the *rotating* rolls to deform the [paper] *base stock to the pattern of the rolls* and to work



[it] *the base stock* beyond [the] *its* elastic limit [of the paper in the said sloping areas between the high and low spots on the rolls,] *between said some sloping areas on the rolls and rupture the base stock only in said some sloping areas, leaving frayed fibrous strands of paper protruding from the ruptures,* while leaving [undeformed substantial] *unruptured substantially all of the remaining* areas of said [paper] *base stock.*

27,454

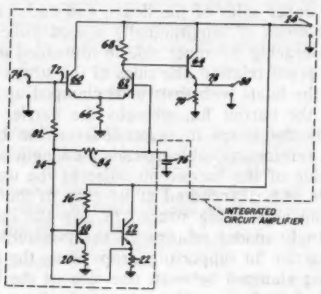
INTEGRATED CIRCUIT BIASING ARRANGEMENTS

Leopold Albert Harwood, Somerville, N.J., assignor to RCA Corporation

Original No. 3,383,612, dated May 14, 1968, Ser. No. 510,307, Nov. 29, 1965. Application for reissue Dec. 2, 1970, Ser. No. 94,637

Int. Cl. H03f *3/14*

U.S. Cl. 330—22 **10 Claims**



A low output impedance bias supply for integrated circuit amplifier configurations capable of delivering an output voltage that is a constant fraction of a power supply potential.

27,455

BRUSH MACHINERY AND BRUSH CONSTRUCTIONS

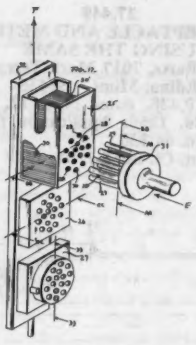
John C. Lewis, Jr., Middlebury, Vt., assignor to Tucel Industries, Inc., Middlebury, Vt.

Original No. 3,471,202, dated Oct. 7, 1969, Ser. No. 578,840, Sept. 12, 1966. Application for reissue Dec. 23, 1970, Ser. No. 101,202

Int. Cl. A46d *1/08*

U.S. Cl. 300—2 **35 Claims**

This invention, consisting of a new and useful brush-making apparatus, allows tufted brush components to be manufactured having pretrimmed synthetic filament tufts. Said apparatus is capable of picking and trimming all the desired tufts required in a single brush construction simultaneously, and further, simultaneously inserting all the tufts into the construction. The apparatus comprises a suitable filament stock box for dispensing cut-to-length synthetic filament and a picking unit con-



taining tuft-forming devices which when inserted into said stock box will pick and trim the desired tuft configuration of any brush component.

27,456

MOLECULAR WEIGHT OF SURFACTANT INFLUENCING THE THERMOSTABILITY OF MICELLAR DISPERSIONS

John A. Davis, Jr., and William J. Kunzman, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

No Drawing. Original No. 3,500,912, dated Mar. 17, 1970, Ser. No. 754,524, July 22, 1968. Application for reissue Sept. 10, 1970, Ser. No. 71,244

Int. Cl. B01j *13/00;* **E21b** *43/22, 47/06*

U.S. Cl. 166—252 **24 Claims**

Thermostability range of micellar dispersions useful to recover crude oil in a secondary or a tertiary oil recovery process can be shifted to higher temperatures by increasing the molecular weight of the surfactant used to obtain the micellar dispersion. These dispersions are especially useful in flooding subterranean formations wherein the temperature is above 80° F.

27,457

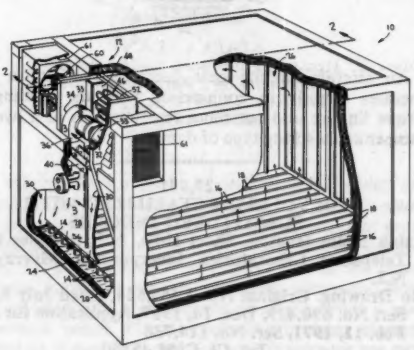
METHOD FOR STORING AND TRANSPORTING FOOD IN A FRESH CONDITION

Eric Rath, La Jolla, Calif., assignor to Frigitemp Corp., Brooklyn, N.Y.

Original No. 3,521,459, dated July 21, 1970, Ser. No. 742,121, June 21, 1968. Application for reissue May 10, 1971, Ser. No. 141,956

Int. Cl. F24f *3/16*

U.S. Cl. 62—78 **1 Claim**



A method of transporting fresh food products in an optimum condition and particularly adapted for use in

modular shipping containers in which dual, complementary air cooling systems recirculating moist air through a storage compartment and about fresh food products without dehydration of the product by maintaining the moist air at a slightly lower temperature than optimum product transit temperature and eliminating decay promoting gases and/or while continuously sterilizing the moist air prior to movement into and through the product compartment.

PLANT PATENTS

GRANTED AUGUST 1, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,245
MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Jan. 11, 1971, Ser. No. 105,747
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, rounded, much branched, bush type, as illustrated and described, characterized by buds and flowers resembling the "Yelow Doll" (Plant Patent No. 2450) miniature rose in general form and size, the color being a blend of pink and white of varying degree, the petals having more pink on the top side and more white on the reverse; the general color effect being pink; and further characterized by a plant which is of vigorous and compact growth, easy to propagate from cuttings, with small leathery, semi-glossy foliage; and abundance of bloom, with flowers borne singly or several to stem in loose clusters or sprays.

3,246
MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Jan. 11, 1971, Ser. No. 105,745
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—10 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, rounded, much branched, bush type, as illustrated and described, characterized by buds and flowers resembling the "Tiny Jack" (Plant Pat. No. 2484) miniature rose in general form, the color being a brighter shade of red; the general color effect being bright red—of a shade resembling "Scarlet Gem" (Miniature, Plant Pat. No. 2155); and further characterized by a plant which is of vigorous and compact growth habit but more dwarf than "Tiny Jack", easy to propagate from cuttings; with small semi-glossy foliage, tinted reddish or bronze on new growth; with flowers borne singly or several to stem in loose clusters.

3,247
AZALEA PLANT

Stuart F. Henson, Fallbrook, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 23, 1970, Ser. No. 92,331
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—56 1 Claim

1. A new and distinct variety of azalea characterized particularly as to novelty by its rapid growth, it warm pink color, the long-lastingness of its flowers, its non-shattering trait, its evergreen type foliage, its early mid-season profuse flowering, and its adaptibility to year round flowering programs.

3,248
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Dec. 3, 1970, Ser. No. 95,000
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—80 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the cultivar Carillon by its approximately one inch larger flower, with the flower having a higher crown and a more decorative flower form, a lighter flower color with less lavender tones, a more pointed petal tip, longer, broader, more deeply indented foliage with more prominent veins and a darker foliage color, more coarse serration to the leaf margin, smaller stipules, one week later response, and a more limited flowering period primarily designed for mid-winter performance.

3,249
CHRYSANTHEMUM PLANT

Sing Ling Lee, Mountain View, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Dec. 11, 1970, Ser. No. 97,396
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—77 1 Claim

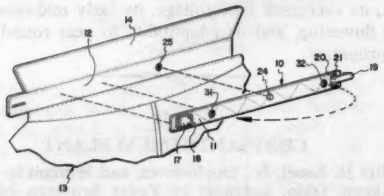
1. A new and distinct cultivar of chrysanthemum which is characterized particularly as to its uniqueness when compared to the parent cultivar Improved Albatross by its 5–7 days earlier and more uniform response, 1" larger and more tightly incurved flowers, approximately ⅛" wider petals which undergo less twisting and reflexing, fewer staminodal petals, stronger, heavier stems, 1"–3" taller depending on culture, foliage broader lobed with less serration, its superior flower form and form retention, and its superior grade performance.

PATENTS

GRANTED AUGUST 1, 1972

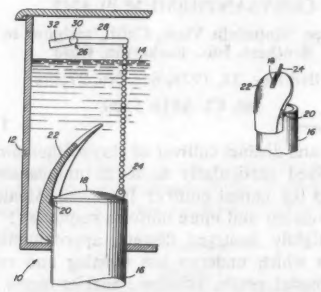
GENERAL AND MECHANICAL

3,680,149
LOCKING STRUCTURE FOR SECURING WEARING APPAREL
Fred W. Standiford, 4341 W. 3630 S., Salt Lake City, Utah
Filed April 26, 1971, Ser. No. 137,130
Int. Cl. A41d *27/22*
U.S. Cl. 2—271 **5 Claims**



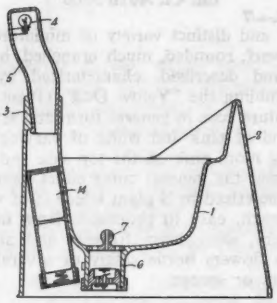
Locking structure for securing wearing apparel such as overcoats to coat hangers, coat trees, and the like, and an overcoat-locking structure combination. The locking structure takes the form of an elongate strap anchored to the wearing apparel item itself at a point underneath the turned-down collar thereof. The elongate member is flexible, taking the form of a strap, and is releasably secured, as by snap-fastener means both to the apparel item underneath the collar and also to itself, so that the same may enjoy a doubled-back, stored configuration. Means are provided to lock the strap in position to its retainer so that the same cannot be removed from storage by an unauthorized person.

3,680,150
FLUSHING SYSTEM
William R. Bowerman, 2457 Jasu Dr., Lawrence, Kans.
Filed Dec. 21, 1970, Ser. No. 99,996
Int. Cl. E03d *1/34*
U.S. Cl. 4—57 P **3 Claims**



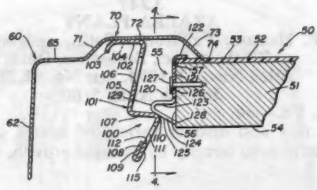
A flushing control mechanism is provided for use particularly with water closets and the like. At the vertical upper end of a drain pipe extending into a tank is a hinged lid which, together with the end of the pipe, is normally located within the tank below the normal level of liquid contained therein. A shield extends above and partially over the end of the pipe whereby, when the lid is opened, the pressure of water flowing into the pipe will hold the lid open and against the shield until the water level drops sufficiently for the lid to drop of its own weight and then close the valve automatically.

3,680,151
CHAMBER POT
Wilfred A. Boardman, 20 Agamemnon Rd., London, and David Owen Wills, 31 Milton Lawns, Chesham Bois, Amersham, both of England
Filed June 18, 1970, Ser. No. 47,385
Claims priority, application Great Britain, Sept. 17, 1969, 45,876/69; Dec. 20, 1969, 62,166/69
Int. Cl. A47k *11/02, 11/06*
U.S. Cl. 4—141 **5 Claims**



A chamber pot for infant use comprising a body having a well in the base of its urine receiving chamber, the well being closed at its lower end by a diaphragm electrical contact unit. The diaphragm is flexed by the presence of urine in the well to close its contacts and energize an illuminable stimulus. The illuminable stimulus has an electric lamp housed within a hollow section of the chamber pot. An electric battery is housed between inner and outer side walls of the chamber pot the outer side wall providing the floor support for the chamber pot.

3,680,152
APPLIANCE RETAINER STRUCTURE
Gerald J. Farrell, Elmhurst, Ill., assignor to Elkay Manufacturing Company, Broadview, Ill.
Filed March 17, 1970, Ser. No. 20,322
Int. Cl. E03c *1/18*
U.S. Cl. 4—187 A **14 Claims**



A retainer structure for mounting an appliance, such as a sink, in a counter opening, wherein the appliance has an outer rim therearound overlying the edges of the counter opening, and comprising a clamp member secured to the underside of the rim and extending into the opening and carrying a cam pivotal about the point of the securement of the clamp

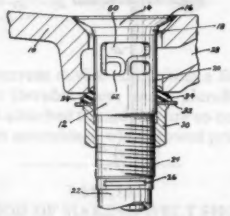
member to the rim between a rest position and a fully deflected position, a retainer clip mounted on the counter within the opening and having a fixed cam surface extending upwardly and inwardly into the opening, the cam engaging the cam surface to press the periphery of the rim against the top of the counter, and a deflecting flange on the cam for permitting insertion of the appliance into the opening without the use of any tools; in a second form, a clip is provided between the underside of the counter and the clamp member and carrying a screw to permit manual adjustment of the rim against the top of the counter.

3,680,153

DRAIN FOR PLUMBING FIXTURES

Ioakim Haldopoulos, and James Edward Niemann, both of Louisville, Ky., assignors to American Standard Inc., New York, N.Y.

Filed Dec. 11, 1969, Ser. No. 884,102
Int. Cl. E03c *1/00*
U.S. Cl. 4—191 **16 Claims**



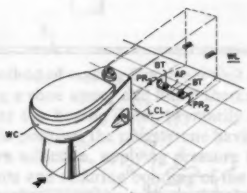
Covers a drain structure for a plumbing fixture such as a lavatory. The drain structure includes a cylindrical metallic liner having its internal wall and most of its external wall covered by a plastic material. The uncovered portion of the metallic liner may be threaded so as to receive a threaded nut for affixing the drain mechanism to the basin of the plumbing fixture.

3,680,154

MOUNTING STRUCTURE FOR TOILET BOWL OR THE LIKE

Henry Marshall Stairs, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.

Filed Sept. 2, 1970, Ser. No. 68,831
Int. Cl. E03d *11/00*
U.S. Cl. 4—252 R **8 Claims**



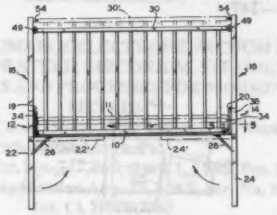
Covers the combination of a toilet bowl and an anchor plate for mounting the toilet bowl on the floor of a room. The underside of the toilet bowl is provided with two tapered lugs or other projections which are to receive two corresponding projections of the anchor plate. The structure enables the toilet bowl to be adjusted in its relative position with respect to the anchor plate so that the bowl may be slid or moved, within predetermined limits, to meet the rear wall of the room where the bowl may be attached and held firmly against the anchor plate and against the floor.

3,680,155

FOLDABLE BABY CRIB

John R. McMann, 3530 Donald St., Eugene, Oreg.

Filed April 16, 1970, Ser. No. 29,002
Int. Cl. A47c *29/00*; A47d *7/00*; A47c *21/00*
U.S. Cl. 5—99 **2 Claims**



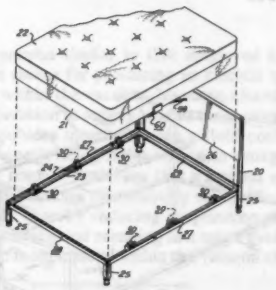
A foldable baby crib includes a mattress supporting frame with foldable legs, and foldable head and foot boards at either end of the frame. Slatted crib sides are provided with tongue members slidably received in slotted brackets arranged for allowing vertical disposition of the sides in hooked relation to the head and foot boards, and alternatively facilitating folding over of the crib sides in juxtaposition with each other on top of the crib mattress. The head and foot boards fold from either end over the aforementioned sides to complete a flat package. Each crib side is also removable in a vertically downward direction.

3,680,156

SUSPENSION SYSTEM

Herbert A. McKee, Collingswood, N.J.; Charles E. Kensil, Philadelphia, and Walter B. Udell, Melrose Park, both of Pa., assignors to said McKee, Kensil and Udell, part interest to each

Division of Ser. No. 645,454, June 12, 1967, Pat. No. 3,503,389. This application March 9, 1970, Ser. No. 17,383
Int. Cl. A47c *21/00, 23/00, 31/00*
U.S. Cl. 5—238 **6 Claims**

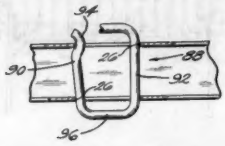


A plurality of resilient supports or floats are interposed between a body structure such as the box spring of a bed and the bed frame to float the box spring and mattress, and may if desired be used in conjunction with an electrically energizable vibrator clamped to the box spring base to impart vibrations to the entire box spring and mattress when energized. The positioning of the floats and the vibratory characteristics thereof affect the vibrational amplitude and direction which may be generated at different points on the support structure. A resilient rubber column of 30 to 50 durometer is used in each float and provides for movement with three degrees of freedom. Optimum general usage of the suspension system is provided by two floats on each side of the box spring end-spaced inward from head and foot , and when used, the vibrator is preferably clamped to one side of the box spring base.

3,680,157
FRAME FOR BOX SPRING ASSEMBLY

Walter V. Slominski, Lexington; John P. Kitchen, Georgetown, and Jack C. Mandusky, Lexington, all of Ky., assignors to Hoover Ball and Bearing Company, Saline, Mich.

Filed Dec. 19, 1969, Ser. No. 886,468
Int. Cl. A47c 23/02, 23/04
U.S. Cl. 5—247 4 Claims

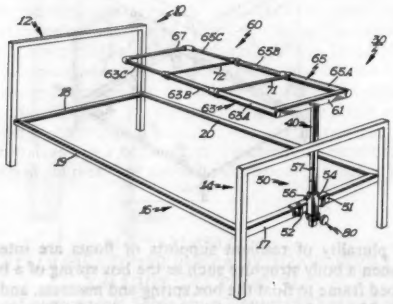


A frame formed at least in part of metal and adapted to be combined with a box spring assembly to provide a support for the spring assembly. The frame is generally rectangular and consists of side and end frame rails and a plurality of spaced cross rails connected to and extended between the side rails, the majority of the springs being mounted in pairs of aligned slots formed in the cross rails. Two forms of the invention are disclosed, an all metal form and a combination wood and metal form in which the side and end rails are made of wood. In the all metal form, wood strips and plastic strips are assembled with the side and end rails so as to provide tacking surfaces on which the conventional cloth cover for the box spring assembly can be mounted.

3,680,158
BEDDING SUPPORT APPARATUS

Roy A. Speed, 524 Third Ave., Brainerd, Minn.

Continuation-in-part of Ser. No. 5,758, Jan. 26, 1970, abandoned. This application May 22, 1970, Ser. No. 39,639
Int. Cl. A47c 21/00, 23/00
U.S. Cl. 5—319 12 Claims

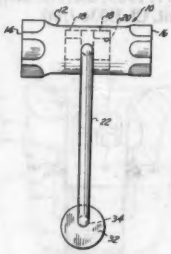


Support Apparatus for bedding comprising post means, means for attaching the post means to the central portion of the foot of a bed mattress support frame or to the central portions of the foot board of the bed so that the post means is vertically disposed, a cradle member having a first transverse section connected at its central point to the top of the post means, the transverse section having depending from the ends thereof two spaced apart longitudinal sections extending in parallel relationship and each having at least one stage of telescoping so as to be adjustable in the longitudinal sense, and a second transverse section connected to the other ends of the longitudinal sections whereby said cradle member may be positioned a selected amount along and in spaced parallel relationship with the mattress to thereafter serve as a support for bedding.

3,680,159
SPARK PLUG WRENCH

Sidney A. Wharram, 1360 Kra-hur Dr., Davison, Mich.

Filed Sept. 21, 1970, Ser. No. 73,734
Int. Cl. B25f 1/00
U.S. Cl. 7—1 E 5 Claims

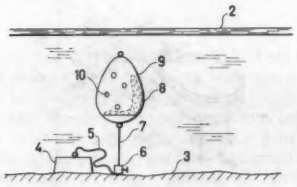


A spark plug wrench including a tubular member having a pair of spark plug sockets disposed on opposite ends thereof for receiving the spark plug to be removed. A U-shaped wire handle is pivotally mounted to the mid-section of the tubular member for providing a handle thereto and includes a spark plug gapping tool secured thereon. A spark plug cleaning brush may be pivotally mounted on the handle.

3,680,160
FLOAT FOR SEAMARKS, BUOYS, PONTOONS AND THE LIKE

Tuomo Jorma Heikki, Keiholehdentie 6, Tikkurila, Finland

Filed Nov. 18, 1970, Ser. No. 90,669
Claims priority, application Finland, Nov. 20, 1969, 3362
Int. Cl. B63b 21/52, 51/02
U.S. Cl. 9—8 R 3 Claims



A medium having a dew point close to the freezing point of the surrounding water is enclosed in a watertight collapsible hollow body anchored to the bottom.

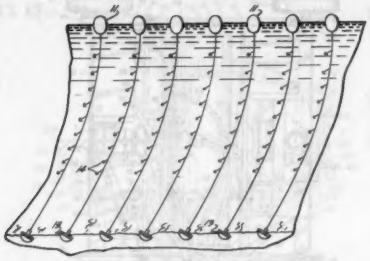
The collapsible body, which normally floats at the surface of the surrounding water, sinks when the freezing point of the water is approached due to the condensation of the medium. The hollow body remains submerged in a collapsed state until the water warms, vaporizing the medium and causing the body to float again.

3,680,161

ANTI-SWIMMER BUOY

James C. Bladh, Vernon, Portsmouth, England, assignor to The United States of America as represented by the Secretary of the Navy

Filed May 8, 1968, Ser. No. 727,742
Int. Cl. B63b *21/52*; B63g *13/00*; B63b *17/00*
U.S. Cl. 9—8 R 9 Claims



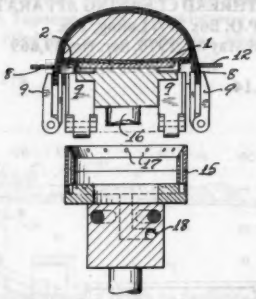
A swimmer deterrent device comprising a float, an anchor, a lightweight line therebetween, and a plurality of swimmer impaling grapnels attached to said line are so constructed as to provide a compact assemblage when stowed prior to use.

3,680,162

METHOD OF MAKING WELT SHOES

Arnold Glickman, 73 Jackson Ave., Rockville Center, N.Y.

Filed April 30, 1971, Ser. No. 138,939
Int. Cl. A43d *9/00*
U.S. Cl. 12—142 D 2 Claims



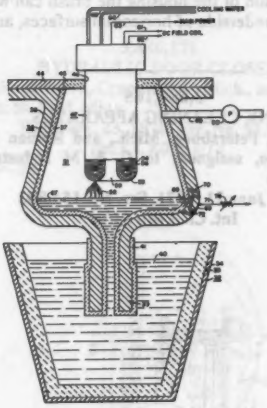
An improved method of making Goodyear welt shoes which consists in bonding a shoe upper and lining therefor, by placing an intermediate top boxing sheet, prymarily of normally rigid polystyrene, in position, the polystyrene having been softened for operative adhesion, applying pressure to the combination of elements and securing bonding of the liner to the upper, supporting the assembly with an insole positioned under the last, the insole carrying a marginal downwardly-projecting rib disposed inwardly of the edge of the insole, providing a wiper-resistance member, the resistance member conforming with the controur of the last, said resistance member entering the area of the insole inwardly of said rib and closely adjacent thereto, pulling the margins of the insole edge and outwardly of the rib, providing an adhesive-ejecting member adapted for pressure-ejection of a thermo-plastic adhesive on the exposed surface of said rib in a controlled localized manner, exerting inwardly direted action of a wiper, marginally conformed with the resistance member, against the upper and forcing an intermediate area of its margins under the insole and against the adhesive carried by the outer face of the rib, with time-heat interval of the wiper to form a bond, removing the last, and stitching the assembly through the welt, through the inwardly direceted boxed formation of the upper margin, and through the rib close to its apex, to be followed by assembling a filler and outsole to the assembly.

3,680,163

NON-CONSUMABLE ELECTRODE VACUUM ARC FURNACES FOR STEEL, ZIRCONIUM, TITANIUM AND OTHER METALS AND PROCESSES FOR WORKING SAID METALS

Serafino M. De Corso, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 717,560, April 1, 1968, Pat. No. 3,586,348. This application Aug. 27, 1969, Ser. No. 870,760
Int. Cl. H05b *7/08*
U.S. Cl. 13—9 11 Claims



Degassing apparatus similar to that employed in the D-H process includes means for producing an electric arc of controllable power within the vacuum degassing chamber during the degassing operation to supply heat to the molten material. The electrode includes means forming a fluid cooled arcing surface and a magnetic field coil for setting up a magnetic field so oriented with respect to the arc that a force is exerted on the arc which substantially continuously moves the arc along the arcing surface thereby reducing evaporation of material from the arcing surface and resulting in a more even distribution of heat to the molten metal within the vacuum chamber.

3,680,164

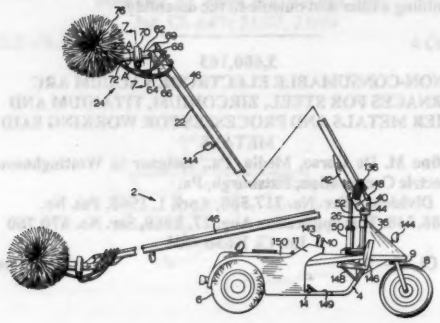
LOW LEVEL WASHING AND DUSTING APPARATUS FOR AIRCRAFT AND THE LIKE

Walter Edward Thornton-Trump, 1544 Knareswood Dr., Port Credit, Ontario, Canada

Filed June 11, 1970, Ser. No. 45,394
Claims priority, application Great Britain, June 12, 1969, 29,960/69
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 E 12 Claims

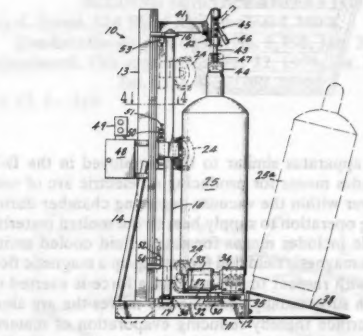
An aircraft washing and dusting device consisting of a small three wheeled vehicle having a boom that can be raised and lowered, with a brush on the end of the boom. The brush consists of two large diameter cylindrical halves spaced slightly apart along an axle. The axle is journelled in a housing and is rotated hydraulically, and the housing is mounted on the end

of the boom for rotation *by another hydraulic motor) about an axis perpendicular to the axis of the axle. The housing and brush are levelled by a levelling rod as the boom is raised and



lowered. By rotation of the housing the brush can wash vertical surfaces, the underside of horizontal surfaces, and sloping surfaces.

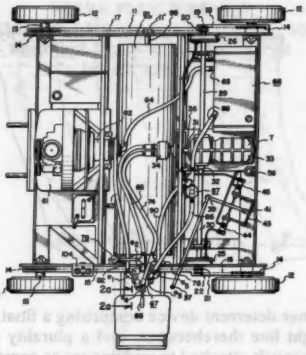
3,680,165
TANK CLEANING APPARATUS
Orville L. Garst, Petersburg, Mich., and Roman S. Miller, Archbold, Ohio, assignors to G & M Industries, Inc., Archbold, Ohio
Filed June 21, 1971, Ser. No. 154,882
Int. Cl. A46b *13/02*
U.S. Cl. 15—56 **9 Claims**



The invention is a tank cleaning apparatus. A rotary brush is mounted on a vertically traveling carriage and is biased against the periphery of a tank being cleaned. The tank is supported on a rotating platform and held in place by an upper releasable clamp.

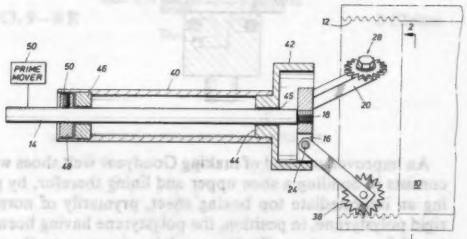
3,680,166
SCRAPING MACHINE AND ALLIED STRUCTURE
Ray Morgan Dyreng, Manti, Utah
Division of Ser. No. 802,128, Feb. 25, 1969, Pat. No. 3,601,834. This application Jan. 25, 1971, Ser. No. 109,230
Int. Cl. E01h *1/00*
U.S. Cl. 15—93 B **4 Claims**

The present invention relates to vehicles which may be designed and used for scraping unwanted debris such as poultry droppings from a particular collector bed to a desired locale such as a conveyer trough. The vehicle of the invention, though provided with a power plant such as an internal combustion engine, is nonetheless fluid-pressure driven, with its blade structure also preferably being actuated by fluid pressure. In a preferred form of the invention, a setting of the hydraulic drive, so as to pre-determine the direction of travel



of the vehicle, will simultaneously position the blade correctly for appropriate scraping or at appropriate neutral position. Only a slight adjustment is needed to convert the blade structure to scrape in an opposite direction. Appropriate steering means is provided to selectively brake opposite sides of the vehicle.

3,680,167
SCREW THREAD CLEANING APPARATUS
John M. Rogers, P.O. Box 777, Luling, Tex.
Filed May 22, 1970, Ser. No. 39,669
Int. Cl. B08b *9/02*
U.S. Cl. 15—104.14 **15 Claims**

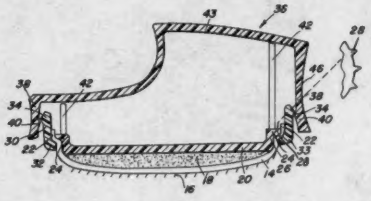


Apparatus for cleaning screw threads, typically those in a pipe joint, including a plurality of arms pivotally connected to a shaft. Around the shaft is a sleeve having an internal rack portion in the vicinity of the shaft-to-arm connections, the arms having a mating pinion for swinging the arms outward to contact internal threads of the pipe when the shaft is axially moved inward with respect to the sleeve. Alternately, the arms can be swung out by centrifugal force when the shaft is rotated. The outward ends of the arms have free-wheeling, toothed cleaning wheels which meet the threads at an angle in the cleaning operation.

3,680,168
FABRIC BRUSH

Kurt Krusche, Frankfurt, and Hubert Zimmermann, Mannheim, both of Germany, assignors to Allstar Verbrauchsgueter GmbH & Co. KG, Frankfurt am Main, Germany

Filed April 24, 1970, Ser. No. 31,723
Claims priority, application Germany, May 9, 1969, G 69 18 852.9
Int. Cl. A46b 3/10, 9/02
U.S. Cl. 15—171 **11 Claims**

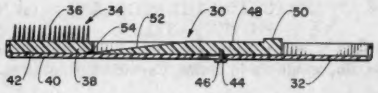


The present invention relates to a brush, and more particularly to a hand brush in which the brush element comprises bristles which are embedded in a flat, flexible carrier, such as a fabric or the like, or are mounted thereon, and in which the brush element, padded by an elastic mass, is adapted to be snapped into a handle made of a suitable plastic. Any conventional material such as hair, velvet, plush, rigid fibers or the like may be used as bristles, and the bristles are inserted close together in the flat carrier with the tips of the bristles being all inclined in the same direction relative to the carrier.

3,680,169
TOOTHBRUSH

Dallas Glen Thompson, Los Angeles, Calif., assignor to William B. Koerner, Topango, Calif., a part interest

Filed Oct. 12, 1970, Ser. No. 80,002
Int. Cl. A46b 7/04
U.S. Cl. 15—176 **4 Claims**



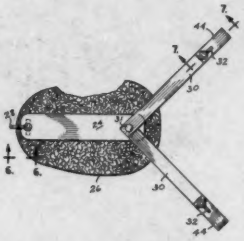
A first embodiment of a brush to facilitate the cleaning of teeth of human beings wherein the brush head has a plurality of longitudinal projections which non-removably cooperate with mating recesses within the brush handle. A second embodiment of the brush to facilitate the cleaning of teeth wherein the base of the brush cooperates in a tight fitting manner with the brush handle and is ejectable therefrom by a slidable wedge shaped member.

3,680,170
FLOOR CLEANING DEVICE FOR ATTACHMENT TO A SHOE

Clarence R. Sims, Route 6, Box 121, Elkhart, Ind.

Filed Dec. 14, 1970, Ser. No. 97,770
Int. Cl. A47l 13/282
U.S. Cl. 15—227 **6 Claims**

A floor cleaning device for attachment to a shoe which includes a cleaning pad, an elastic means carrying the cleaning pad and engageable with the shoe for positioning the pad adjacent the sole of the shoe. The pad has first and second floor-engaging surfaces and is designed to be used in a first operative position in which only one of the surfaces is exposed for floor-engaging use and a second operative position in which only the other of the floor-engaging surfaces is exposed for

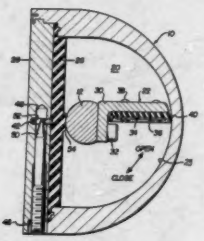


floor-engaging use so as to accommodate for wear of the pad. Additionally, the elastic means may be secured to a carrier which is positioned and held against the sole of the shoe with the cleaning pad being releasably secured to the carrier.

3,680,171
HYDRAULIC DOOR CLOSER

Robert D. MacDonald, Grand Blanc, Mich., assignor to Wright Products, St. Paul, Minn.

Filed Nov. 23, 1970, Ser. No. 91,918
Int. Cl. E05f 3/14
U.S. Cl. 16—58 **1 Claim**



A door closer comprises a housing having a door-closing spring and a fluid-filled door checking or retarding chamber in which a vane rotates in response to opening and closing of the door. The vane permits fluid to leak past its edges on movement in the door opening direction but forces fluid ahead of it and through a novel bypass passage on movement in the closing direction. The adjustable bypass passage comprises an adjustably positioned flexible seal which bears on the vane-supporting shaft, the degree of pressure therebetween regulating the rate of fluid flow through the passage defined by said seal and shaft.

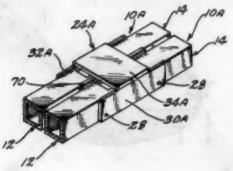
3,680,172
IMPLEMENT HINGE

Chester F. Couser, Zearing, Iowa

Continuation-in-part of Ser. No. 721,845, April 16, 1968, Pat. No. 3,545,033. This application Sept. 9, 1970, Ser. No. 70,847
Int. Cl. E05d 11/10
U.S. Cl. 16—163 **14 Claims**

A device for interconnecting a pair of units to position them selectively at different positions relative to each other. The hinge in either of its embodiments involves a pair of linkages having different lengths wherein one of the linkages extends between the two frame members on one side of the longitudinal center axis and the second linkage extends between the two frame members on the opposite side thereof with each of the linkages having different lengths. The frame members may

be hollow and rectangular in cross-section allowing the linkages to be connected to the side walls of the frame members and one of the linkages may substantially enclose the other



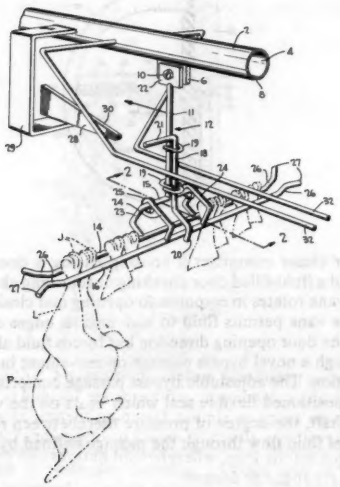
linkage and the ends of the frame members. Several hinges may be connected together in side by side relationship or end to end relationship allowing an infinite number of combinations and arrangements.

3,680,173

POULTRY SHACKLE

Walter H. Martin, San Antonio, Tex., assignor to Refrigeration Engineering Corporation, San Antonio, Tex.

Filed Dec. 4, 1970, Ser. No. 95,142
Int. Cl. A22c *21/00*
U.S. Cl. 17—44.1 **7 Claims**



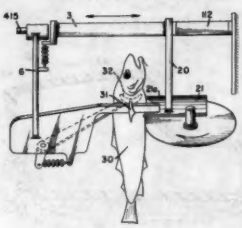
A poultry shackle adapted for suspension from an overhead conveyor to convey a plurality of poultry through a refrigerated chamber or the like and comprising a pair of support bars disposed parallel to each other in a common horizontal plane and arranged for relative spreading movement in said plane, but normally restrained by suitable latch means against spreading beyond a predetermined spacing insufficient to prevent passage between them of the knee joints of the legs of fowls inserted horizontally between said bars, so the fowls are suspended in inverted position from their knee joints. Release of the latch means permits relative spreading of the bars to discharge the fowls downwardly by gravity at a suitable discharge station along the conveyor.

3,680,174

METHOD OF AND APPARATUS FOR GRIPPING A FISH FOR MECHANICAL DRESSING

Franz Friedrich Johannes Dohrendorf, Lubeck, Germany, assignor to Nordischer Maschinenbau Rud Baader, Lubeck, Germany

Filed Aug. 13, 1969, Ser. No. 849,739
Int. Cl. A22c *25/08*
U.S. Cl. 17—45 **1 Claim**



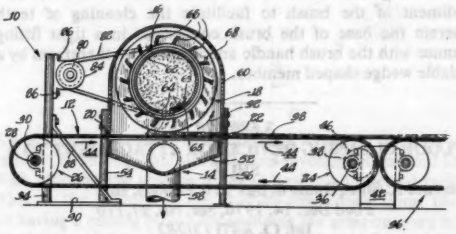
The fish is gripped and moved in vertical position suspended from its pectoral fins with its head pointing upwardly and its belly forwardly between parallel guide means forming parts of a reciprocating slide and being spreadable outwardly against the action of springs. The fish is moved between the guide means towards centering means arranged in the vertical mid-plane of the guide path piercing the gap formed between the collar bones of the fish and indenting its belly from the outside. Spring loaded back supporting means cooperating with the guide means snap in behind the thus centered fish engaging either side of it at its neck zone thereby firmly holding the same in a surprisingly simple yet reliable manner. The fish held in this position is moved with the slide towards and past cutter discs journalled in a machine frame and rotating in planes including approximately angles of 45° with and at either side of the vertical mid-plane of the guide path. The rotating cutter discs severe the head of the fish from its body during which operation the head is progressively bent backwardly, thereby gaining the lobes of meat disposed in the neck of the fish.

3,680,175

LINEAR APPARATUS FOR THE PRODUCTION OF NON-WOVEN FABRICS

Ewald Albert Kamp, Chicago, and John C. Smith, Naperville, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

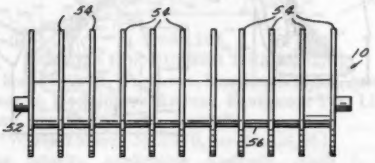
Filed July 2, 1970, Ser. No. 51,968
Int. Cl. D01g *25/00*
U.S. Cl. 19—156.3 **11 Claims**



Apparatus for producing a non-woven fibrous element includes a foraminous member for collecting a fiber deposit, a suction arrangement for exhausting a carrier fluid through a work section of the foraminous member, and means for sup-

plying a quantity of fibers suspended in a carrier fluid to the work section. According to the invention, this apparatus further comprises means for delivering a slurry of fibers to the work section, including a plurality of arcuately spaced discharge orifices and drive means for rotating the discharge orifices causing them to scan the surface of the work section and deposit a uniform layer of fibers thereon.

3,680,176
GIN STAND
William L. Calhoun, Sr., P.O. Box 517, Rayville, La.
Filed April 1, 1970, Ser. No. 24,787
Int. Cl. D01b *1/08*
U.S. Cl. 19—63 **4 Claims**



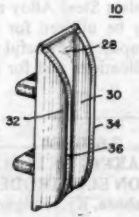
An improved gin stand device is provided which includes an eccentric saw and mandril combination. The eccentric combination is constructed to include saw blades concentrically mounted on a mandril which is itself mounted on an eccentric axis of rotation.

This application is related to the subject matter of U.S. Pat. No. 3,448,493.

ERRATUM

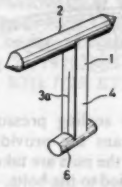
For Class 19—240 see:
Patent No. 3,680,192

3,680,177
CLIP MEMBER
Benjamin Ginsberg, Winthrop, Mass., assignor to I. Ginsberg & Sons, Inc., East Boston, Mass.
Filed Nov. 23, 1970, Ser. No. 91,691
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 PC **2 Claims**



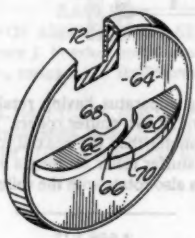
A one piece resilient clip member for supporting a drawer divider including converging side walls for frictionally engaging the divider and a plurality of abutments having ridges and being adapted for cooperative insertion within pre-formed transversely extending grooves in a drawer.

3,680,178
FASTENERS FOR ATTACHING CLOTH TO RIBS OF UMBRELLAS
Takuo Kawano, Kyoto, Japan, assignor to Moon Bat Kabushiki Kaisha, Kyoto, Japan
Filed Sept. 28, 1970, Ser. No. 75,935
Claims priority, application Japan, Dec. 26, 1969, 45/1550
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 PF **1 Claim**



A fastener for attaching the cloth to the ribs of an umbrella made of deformable material and comprising a neck, a transverse rod integrally connected to one end of the neck and being twistable to align with the neck for piercing the cloth, and an anchor having an opening for receiving the rib and connected to the other end of the neck.

3,680,179
DETACHABLE BUTTON AND FASTENING MEANS THEREFOR
Wayne E. Saari, P.O. Box 1533, Santa Barbara, Calif.
Division of Ser. No. 701,190, Jan. 29, 1968, Pat. No. 3,606,650. This application June 1, 1971, Ser. No. 148,826
Int. Cl. A44b *1/38, 13/02*
U.S. Cl. 24—106 **1 Claim**

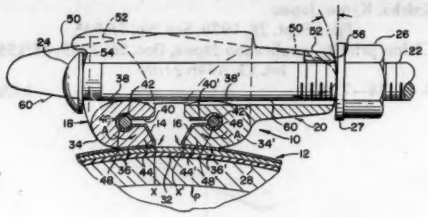


A garment fastening system comprising a button having a diametrically extending attaching means adapted to engage an appropriate loop, or similar fastening means, attached to a garment, with the attaching means having means for centering the button on the loop, whereby said buttons can be detached and interchanged as desired.

3,680,180
LOW-PROFILE WIDE RANGE PIPE CLAMP
Wallace E. Gould, and Peter N. Cassimatis, both of Decatur, Ill., assignors to Mueller Co., Decatur, Ill.
Filed Feb. 25, 1971, Ser. No. 118,928
Int. Cl. B65d *63/02;* **F16l** *55/16*
U.S. Cl. 24—279 **12 Claims**

A low-profile pipe clamp for use in encircling a pipe or main as a pipe repair clamp or a service side outlet clamp. The pipe clamp comprises a flexible band of sheet metal or the like having a gasket liner which seals with a section of the exterior of the pipe, the band being split and made of at least one section and having at least a pair of lugs attached to each of its opposed end portions. Bolts draw the lugs together and cause the

band to tightly encircle the pipe. Means are provided for causing the clamp lugs to positively rock in an opposite sense so as to draw the band up faster than the nut is taken up on the bolt



and thus increase the sealing pressure for the same bolt torque. Additional means are provided to reduce bending strains in the bolt when the nuts are taken up so that the necessary torque can be applied to the bolts.

3,680,181

STUFFER CRIMPING APPARATUS

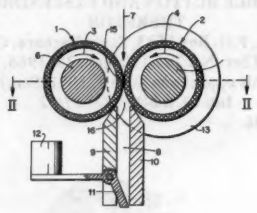
James W. IJ. Heijnis, Arnhem, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed March 31, 1971, Ser. No. 129,835

Claims priority, application Netherlands, April 1, 1970, 04580/70

Int. Cl. D02g *1/12*

U.S. Cl. 28—1.6 **5 Claims**



Stuffer crimping apparatus having retaining rings coaxial and adjacent to one of two stuffer rollers. The retaining rings are of a larger diameter than the coaxial roller, thereby overlapping the other stuffer roller forming a yarn guide channel. The retaining rings also rotate with the roller.

3,680,182

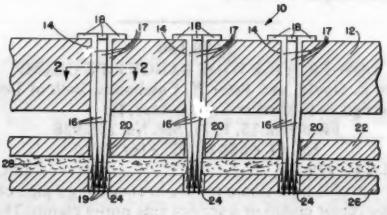
NEEDLE BOARD

Perry E. Scott, North Adams, Mass., assignor to Crompton & Knowles Corporation, Worcester, Mass.

Filed May 11, 1971, Ser. No. 142,323

Int. Cl. D04h *18/00*

U.S. Cl. 28—4 R **9 Claims**



A needle board in which a board-like holder has a plurality of openings for supporting needles; there being a plurality of needles in each opening held in abutting contact with one another.

3,680,183

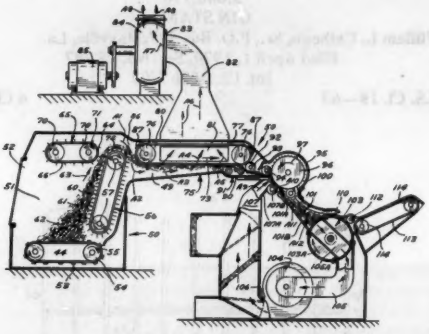
MACHINES FOR MAKING METAL FIBRIL COMPACTS

Bertil J. Sundberg, Minneapolis, Minn., and Andreas Luksch, deceased, late of Minneapolis, Minn. (by David R. Johnson, executor), assignors to Brunswick Corporation

Division of Ser. No. 391,708, Aug. 24, 1964, Pat. No. 3,505,038. This application March 18, 1971, Ser. No. 125,801

Int. Cl. B23p *17/06*

U.S. Cl. 29—4.5 **6 Claims**



Method and Product: Compacts composed of fibrils of tough, recalcitrant metals such as stainless steel; the density of the compacts being about 30 to 85 percent of the density of the metal of which the "fibrils" are composed. The fibrils range in transverse dimension from about 0.0005 to 0.005 inch, have an area less than that of a 0.002 inch circle, are of uniform length, and are made by shearing off narrow width pieces from the end of a rolled strip of parent metal. Individual fibrils have the two flat rolled faces of the parent strip and two sheared faces the width of one of the sheared faces being wider than the other as a result of shearing, so that the cross section of the fibril ranges from roughly triangular to squashed four-sided configuration with the two rolled faces converging toward the narrower of the sheared faces. Compacts are made by separating the fibrils and air lifting them against a traveling screen through which loose extraneous burrs, chips and slivers are substantially removed, thereby leaving a mat of fibrils substantially free from degraded particles which might otherwise contaminate the mat and migrate through it. The mat has excellent green strength and is compressed through several stages preferably with intermediate annealing until the densities are obtained. Compacts of varying densities throughout the thickness of the compact may be prepared. The compacts composed of the compressed mat (or layers of mat) may be supported on exterior surfaces by woven or reticulated metal support members. Extremely recalcitrant metals such as hard-to-work Type 347 Stainless Steel Alloy and similar difficulty machinable metals may be utilized for making the original fibrils. The finished compacts are useful for sophisticated filtering and the like applications and for transpiration cooled surfaces.

3,680,184

METHOD OF MAKING AN ELECTROSTATIC DEFLECTION ELECTRODE ARRAY

Ralph F. Greene, Owensboro, Ky., assignor to General Electric Company

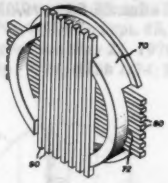
Filed May 5, 1970, Ser. No. 34,653

Int. Cl. H01j *9/00*

U.S. Cl. 29—25.14 **10 Claims**

An array of electrostatic deflection electrodes comprising parallel bars is produced by cutting parallel grooves in a block which is releasably bonded to a temporary support. The grooves are cut to a depth greater than the thickness of the

block leaving portions comprising parallel bars. Following this step, the assembly is inverted and the grooved block is permanently bonded to a support while the temporary support is



still bonded to the block to maintain the alignment of the parallel bars comprising the grooved block. The temporary support is then removed. If non-metallic material is used, the bars are metalized in a final step.

3,680,185

BLADES FOR RUBBER TIRE RASPS

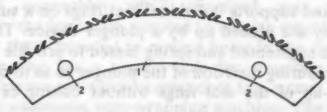
Samuel Robert Wood, Warrawee, New South Wales, Australia, assignor to Kookaburra Retread Equipment Pty. Limited, Auburn, New South Wales, Australia

Filed March 31, 1970, Ser. No. 24,061

Claims priority, application Australia, April 1, 1969, 52877/69

Int. Cl. B23d *71/00*

U.S. Cl. 29—79 **9 Claims**



A rotary rasp blade of curved shape having along its outer edge a plurality of finger like teeth, the teeth being offset to both sides of the blade to form rows of teeth with each tooth in each row inclined in a direction opposite to its adjacent teeth in that row.

3,680,186

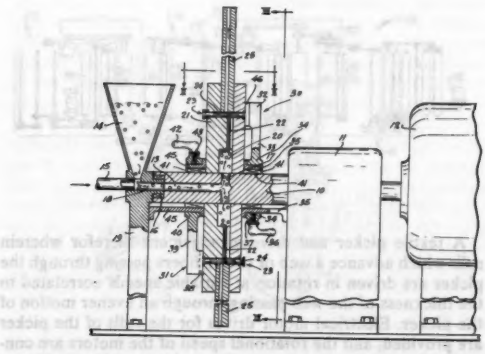
DEVICE FOR THROWING HARDENED STEEL BALLS

Donald Fraser Symington, 175 Bronson Ave. #1004, Ottawa, Ontario, Canada

Filed June 18, 1970, Ser. No. 47,225

Int. Cl. B21c *37/30;* B24b *39/00*

U.S. Cl. 29—90 **9 Claims**



For use as a stone cutter or for other high energy surface treatment of a workpiece, such as peening or pulverizing, a series of hardened steel balls are discharged individually by centrifugal force from a high speed rotating structure. Release of each ball is controlled by a slider or other release mechanism in the rotating structure, such mechanism being operated at a predetermined circumferential location by a cam or gearing. This location can be adjusted manually, or it may be oscillated mechanically to cause the stream of discharged balls to pan back and forth across the workpiece.

3,680,187

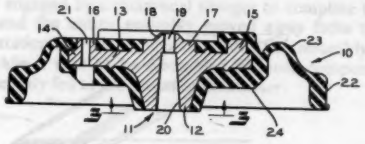
METHOD OF MAKING VALVE DIAPHRAGM

Myles N. Murray, Chagrin Falls, Ohio, assignor to Industrial Electronic Rubber Company, Twinsburg, Ohio

Filed Aug. 24, 1970, Ser. No. 66,267

Int. Cl. B21k *1/20;* B23p *13/00*

U.S. Cl. 29—156.7 R **3 Claims**



The diaphragm has an axial passage and a radially spaced bleed hole both in a rigid insert about which the flexible body of the diaphragm is molded. The insert is automatically finally indexed to angularly locate the bleed hole in the mold cavity by a non-round interfit of its axial passage with a pin in the cavity, and there are beads formed about ends of such passage and the bleed hole which are crushed by overlying parts of the mold pieces in closing the same for sealing the passage ends against blocking by the molding compound, the latter being injected to the cavity only after such closure.

3,680,188

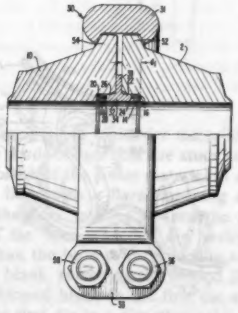
METHOD OF ASSEMBLING A SEAL UNIT

John F. Mason; Bruce J. Frazier, and Norman L. Freemen, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 731,424, May 23, 1968, Pat. No. 3,554,581. This application June 11, 1970, Ser. No. 45,398

Int. Cl. B21d *53/00;* B21k *29/00;* B23p *15/26*

U.S. Cl. 29—157 **4 Claims**



A method for assembling a seal unit including two opposed conduit parts and a composite sealing ring adapted to be interposed therebetween. The sealing ring includes deformable material on the outer periphery and flexible sealing flanges extending about at least a portion of the deformable material. The seal is partially inserted into the cavity of one conduit part

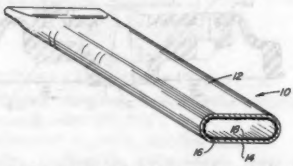
until the deformable material contacts the internal sealing surface of that part. Afterwards the second conduit part is placed over the exposed portion of the seal to cause the internal sealing surface of the second part to contact the deformable material. The two conduit parts are drawn together to thereby cause the deformable material to deformingly contact the internal surfaces of the conduit parts and are subsequently drawn further together to cause the deformable material to flex the sealing flanges of the sealing ring into engagement with the internal sealing surfaces of the conduit parts.

3,680,189

METHOD OF FORMING A HEAT PIPE

Don W. Noren, Redwood City, Calif., assignor to Noren Products, Inc., Redwood City, Calif.

Filed Dec. 9, 1970, Ser. No. 96,318
Int. Cl. B21d *53/02*
U.S. Cl. 29—157.3 R **10 Claims**



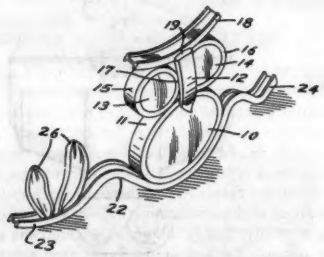
The specification and drawings disclose flat heat pipe structures and methods for forming same. One embodiment comprises an outer tube into which a second tube of wick material is inserted. The outer tube and the wick tube are selected so that the wick has a higher tensile strength. Thereafter, the outer tube can be deformed to a flattened configuration and the higher tensile strength of the wick causes it to closely engage the inner surface of the outer tube. The second embodiment comprises a sandwich-like construction of outer wall forming plate members, wick sheets, and intermediate spacers bonded to both the wick sheets and the outer wall forming plates.

3,680,190

PROCESS OF MAKING DECORATIVE OBJECTS

Marie E. Lorch, 419 W. Wentworth, West St. Paul, Minn.

Division of Ser. No. 683,181, Nov. 15, 1967, Pat. No. 3,576,697. This application June 12, 1970, Ser. No. 57,854
Int. Cl. B21f *43/00*; B23p *13/00*
U.S. Cl. 29—160.6 **8 Claims**



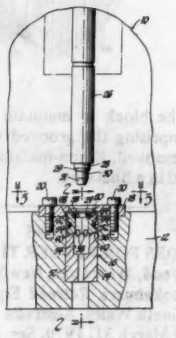
Decorative objects are taught comprising preformed shapes of solid inorganic material having smooth perimeter edges, flexible strips of grooved lead material circumscribing the same, and solder joints. In the method of making the objects, soldering is accomplished at a low temperature without melting or distortion of the flexible lead.

3,680,191

SEAL RING PICK-UP SUPPORT

Alistair A. Cameron, Welland, Ontario, Canada, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 3, 1970, Ser. No. 60,262
Int. Cl. B23p *19/02*
U.S. Cl. 29—235 **2 Claims**



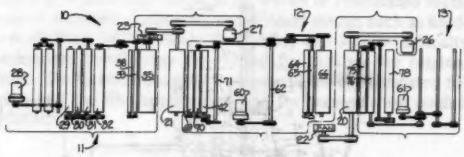
In preferred form, an O-ring seal installing machine is provided with an expanding segment support member which receives and supports individual seal rings on a surface from which they are picked up by a plunger device. The support member is segmented and spring biased to provide for limited expansion during insertion of the plunger so as to obtain positive pick-up of the seal rings without cutting or damaging them.

3,680,192

TEXTILE PICKER HAVING MEANS FOR VARYING FEED OF A WEB PASSING THERETHROUGH

William A. Stevels, Greenville, S.C., assignor to Aldrich Machine Works, Greenwood, S.C.

Filed July 6, 1970, Ser. No. 52,653
Int. Cl. D01h *5/32*
U.S. Cl. 19—240 **5 Claims**

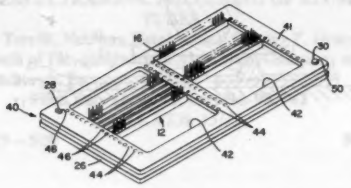


A textile picker and drive arrangement therefor wherein rolls which advance a web of textile fibers passing through the picker are driven in rotation at variable speeds correlated to the thickness of the web passing through an evener motion of the picker. Electrical motor drives for the rolls of the picker are provided, and the rotational speed of the motors are controlled in response to sensing of web thickness by the evener motion.

3,680,193
FRAME FOR ACCURATELY POSITIONING AND MOUNTING ELECTRICAL CONNECTORS

James Scaminaci, Jr., Newbury Park, Calif., and Robert G. Knowles, Litchfield, Conn., assignors to Litton Systems, Inc.

Division of Ser. No. 760,499, Sept. 18, 1968, Pat. No. 3,641,666. This application May 25, 1970, Ser. No. 48,692
Int. Cl. B23p *19/04*; B25b *1/24*; B23q *3/18*
U.S. Cl. 29—271 4 Claims

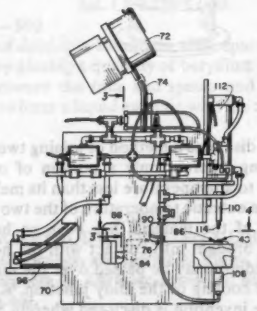


Described is a frame for positioning a number of electrical connectors for use with an automatic wire-wrapping machine. The frame is used by providing a jig having a master reference pin and located therefrom a number of paired alignment pins. Molded-in alignment holes on the connectors mate with the paired alignment pins when the connectors are mounted upon the jig. The frame has a rectangular opening that fits about the positioned connectors while oversized pair alignment openings in the frame are adapted to receive machine screws which are then threaded in mating holes in the connectors. The frame also has a second hole for mounting over the master reference pin which corresponds to a master reference pin on the automatic wire-wrapping machine. The wrapping machine receives the frame and its mounted electrical connectors after the frame is separated from the jig.

3,680,194
METHOD AND APPARATUS FOR ASSEMBLING FASTENER COMPONENTS IN STRIP-LIKE MATERIAL

Frank Monaghan, Glendale; Walter W. Mosher, Jr., and Donald A. Long, both of Burbank, all of Calif., assignors to Precision Dynamics Corporation, Burbank, Calif.

Filed Sept. 21, 1970, Ser. No. 73,733
Int. Cl. B23p *19/00, 19/04*; B23q *7/10*
U.S. Cl. 29—430 48 Claims

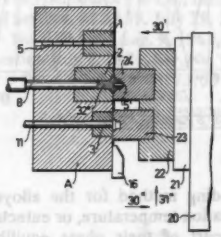


Fastener components having transversely enlarged heads and longitudinally extending shanks are fed one at a time to a pick-up station, engaged by a reciprocal slide and carried to an assembly positioner and retained at the assembly positioner with the component head received in a socket and the component shank projecting properly oriented for a final assembly projecting through strip-like material. The retention at the assembly positioner may be by vacuum against the fastener component head within the socket or by grippers forming the socket and engaging the head. In one form of the apparatus, the fastener component is carried to the sheet-like material positioned over a pilot pin at an assembly station by the assembly positioner with the component shank projecting through the sheet-like material during withdrawal movement of the pilot pin, the assembly being automatically disengaged from the assembly positioner during the assembly operation for removal upon withdrawal of the assembly positioner. In another form of the apparatus, the assembly positioner is at the assembly station and the strip-like material is telescoped over the component shank, the component shank or strip-like material engaged by a reciprocal plunger to complete the assembly and the entire assembly moved away from the assembly station for disengagement from the assembly positioner while a next to be assembled fastener component is simultaneously fed to the assembly positioner.

3,680,195
METHOD PARTICULARLY FOR MAKING STUDS FOR VEHICLE TIRES AND THE LIKE

Sixten Harald Lejdegard, Hallstahammar, Sweden, assignor to Bultfabriks Aktiebolaget, Hallstahammar, Sweden

Filed Dec. 12, 1969, Ser. No. 884,760
Claims priority, application Sweden, Dec. 16, 1968, 17204/68
Int. Cl. B23p *11/00*
U.S. Cl. 29—432.1 6 Claims



A method of fixing a pin of harder material in a body of softer material to produce anti-skid tire studs comprises placing a cylindrical blank of the softer material in a first die having a cylindrical bore with a flared opening and a spindle reciprocable in the bore moving toward the first die in a direction axial of the bore a second die having a recess of larger diameter than the bore to form locally an annular enlargement of said blank, removing the second die while leaving the partially formed blank in the first die and thereafter moving toward the first die in a direction axial of the bore a third die having a pin of said harder material positioned axially therein and an annular recess surrounding said pin to press the pin into the partially formed blank and produce flow of said softer material radially into said recess to form a stud having the pin of harder material in one end of a body of softer material having an annular flange intermediate its ends. A head is thereafter formed on the end of the stud opposite the pin.

3,680,196

PROCESS FOR BONDING CHIP DEVICES TO HYBRID CIRCUITRY

Charles Z. Leinkram, Bowie, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 8, 1970, Ser. No. 35,755
Int. Cl. B23k 31/02
U.S. Cl. 29—473.1 3 Claims

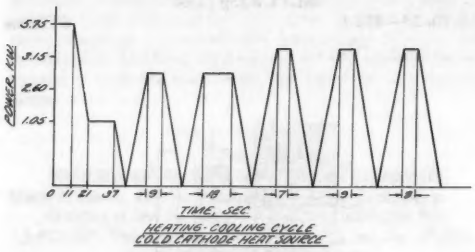
A process for bonding chip devices to hybrid circuitry including the steps of: 1) prewetting the chips by scrubbing in a gold-silicon solder lake at 400° C, 2) heating the substrate to eutectic temperature of 377° C, 3) positioning the chips on the gold land of the substrate, 4) pushing the chips onto the substrate to overcome the surface tension and cause the solder to flow, completely wetting the chip and substrate.

3,680,197

DIFFUSION BONDING METHOD

Bernard Saul Blum, Longmeadow, Mass., and Marvin Lee Kohn, Southfield, Mich., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 5, 1969, Ser. No. 874,162
Int. Cl. B23k 31/02
U.S. Cl. 29—487 3 Claims



A diffusion bonding method for the alloys exhibiting a defined recrystallization temperature, or eutectoid or peritectoid behavior as part of their phase equilibrium characteristics, which involves repetitively cycling the alloy to be joined between a temperature slightly above and below the recrystallization temperature, or allotropic transformation temperature, and controlling the rate of new grain nucleation and growth across the joint interface.

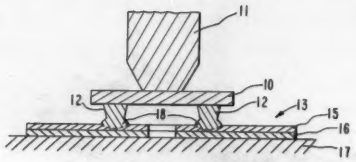
3,680,198

ASSEMBLY METHOD FOR ATTACHING SEMICONDUCTOR DEVICES

John R. Wood, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Oct. 7, 1970, Ser. No. 78,897
Int. Cl. B23k 31/02, 35/24
U.S. Cl. 29—498 2 Claims

A method of attaching a semiconductor die having an interconnecting pattern on one side of it, and having a given liquidus temperature, to a substrate which also has a metal pattern upon it corresponding with the metal pattern on the die, the substrate metal pattern having a melting point at least 10° C. less than the liquidus temperature of the die metal pattern, including the steps of: (1) picking up the die from its backside with a heated pickup tool: (2) transferring the heat from the tool to the die pattern through the backside, the amount of heat being insufficient to totally melt the die metal pattern; (3) placing the die adjacent the substrate so the heated die metal pattern is in registration with the substrate metal pattern, causing the substrate metal pattern to melt: (4) cooling the substrate and the die with their registered metal patterns in contact, thereby resolidifying the metal and forming a rigid mechanical and metallurgical joint between the two metal patterns.

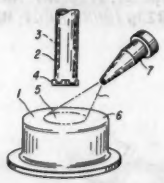


3,680,199

ALLOYING METHOD

Clair A. Johnson, Sherman, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 612,424, Jan. 30, 1967, abandoned.
This application July 6, 1970, Ser. No. 56,145
Int. Cl. B23k 31/02, 35/24
U.S. Cl. 29—498 5 Claims



This application discloses a method of joining two materials together by alloying wherein only a portion of one of the materials is heated to a temperature less than its melting point but greater than the eutectic temperature of the two materials. After the portion of the material has been so heated, the second material is brought into contact with the heated portion. A cooling medium may be passed over the materials alloyed to aid in the cooling of the alloy junction. A preferred embodiment of the invention is disclosed wherein a semiconductor material or chip is alloyed to a support member by rapidly heating the area of the support to which the chip is to be alloyed to an alloying temperature which is above the eutectic temperature and below the melting point of the support,

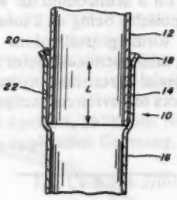
preheating the surface of the chip to be alloyed to the support, bringing the areas to be alloyed into contact with a following pressure to cause essentially instant melting and alloying of the contacted surfaces, and cooling the alloyed areas immediately following contact. The heating and cooling may be accomplished by any suitable means, but a hot or cold gas stream is preferred.

3,680,200

FLUXLESS ULTRASONIC SOLDERING OF ALUMINUM TUBES

James R. Terrill, Natrona Heights, and Stanley F. Dzierski, Arnold, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 16, 1970, Ser. No. 98,742
Int. Cl. B23k *35/12*
U.S. Cl. 29—500 **9 Claims**



Aluminum tubes such as those employed in refrigeration and air conditioning systems can be soldered without flux using ultrasonic energy provided the joint configuration is properly controlled and the ultrasonic pluses are applied in a controlled positive fashion.

3,680,201

PROCESS FOR BRAZING ZIRCONIUM ALLOY ELEMENTS

Gavin McGregor, Port Hope, Ontario, Canada, assignor to Westinghouse Canada Limited-Westinghouse Canada Limitee

Filed Feb. 13, 1969, Ser. No. 798,939
Claims priority, application Canada, Feb. 15, 1968, 012490
Int. Cl. B23k *33/00*
U.S. Cl. 29—502 **5 Claims**

Method of Joining a zirconium alloy spacer to a zirconium alloy tube by placing a quantity of beryllium at a point outside the joint between the tube and spacer and heating the tube and spacer to form a liquid eutectic with the zirconium alloy.

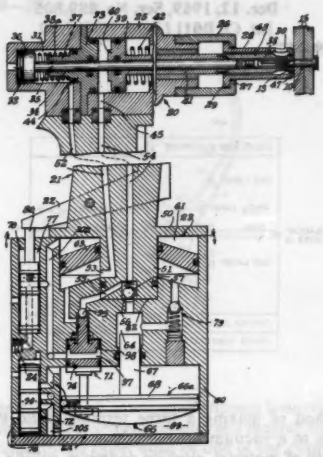
3,680,202

THE METHOD OF SETTING A LOCKBOLT

George Siebol, Orange, and Dorian E. Rippy, Fullerton, both of Calif., assignors to Olympic Screw & Rivet Corporation, Downey, Calif.

Filed Nov. 14, 1969, Ser. No. 876,647
Int. Cl. B21d *39/00*; B23p *11/00*
U.S. Cl. 29—520 **6 Claims**

A hydro-pneumatic hand tool that is trigger-controlled to fasten a collar over the end of a headed lockbolt provided with locking grooves and a severable pintail, and then to create a predetermined clamping and swaging force on said lockbolt



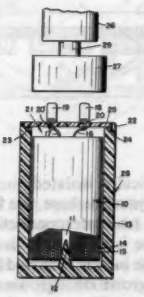
and collar by the use of a two-piston system, with each piston having an independent power source.

3,680,203

ENCAPSULATING OF ELECTRONIC COMPONENTS BY ULTRASONIC WAVE ENERGY

Jerry Braiman, and John B. Greskamp, both of Indianapolis, Ind., assignors to P.R. Mallory & Co., Inc., Indianpolis, Ind.

Continuation of Ser. No. 852,139, July 29, 1969, abandoned, Division of Ser. No. 659,507, Aug. 9, 1967, abandoned. This application July 9, 1971, Ser. No. 161,301
Int. Cl. H01g *9/08*, *13/00*
U.S. Cl. 29—570 **2 Claims**



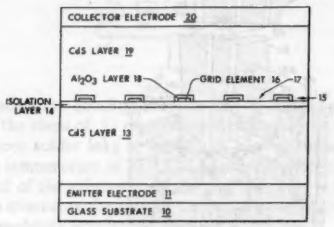
The open ends of thermoplastic containers encapsulating electronic components are closed with a compatible plastic material, the materials being sealed by ultrasonic welding with joints constructed and fitted together for retaining the heat within the joint during the welding.

3,680,204

SOLID STATE DEVICE

Anthony A. Aponick, Jr., Williamsport, Pa., and James G. Gottling, Columbus, Ohio, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 557,831, June 15, 1966. This application Dec. 12, 1969, Ser. No. 889,805
Int. Cl. B01j 17/00; H01l 7/00
U.S. Cl. 29—571 5 Claims



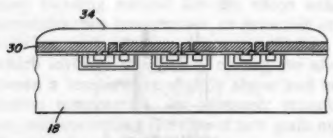
A method of making a three terminal solid state device analogous to a vacuum tube triode is described. The device has a body of material, such as cadmium sulfide, capable of supporting a space-charge-limited current provided by an emitter electrode. A collector electrode is capable of receiving current carriers from such space charge region. A control electrode is located within said body of material to control the flow of current to the collector electrode. The control electrode is a grid having apertures of approximately 3000 A. diameter.

3,680,205

METHOD OF PRODUCING AIR-ISOLATED INTEGRATED CIRCUITS

Bernard L. Kravitz, Queens, N.Y., assignor to Dionics, Incorporated, Westbury, N.Y.

Division of Ser. No. 833,559, June 16, 1969, Pat. No. 3,559,283. This application March 3, 1970, Ser. No. 18,806
Int. Cl. H01l 7/50
U.S. Cl. 29—578 7 Claims



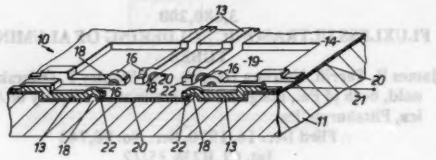
Islands of dielectrically isolated monocrystalline silicon, fabricated in a polycrystalline base, are first produced. Device fabrication and beam lead interconnection follow. Thereafter the planar top surface is covered with an etch-resistant wax and the polycrystalline base is removed by etching. In another embodiment, SiO_2 is grown on a grooved, monocrystalline silicon slice, and polycrystalline silicon is deposited thereover. The slice is then lapped down on the top side so that the polycrystalline silicon and SiO_2 form barriers. Second side is lapped after devices are fabricated and after beam leads are formed. Active devices and beam leads are fabricated on one surface, and the polycrystalline material is lapped and etched away from the back. In either case, the remaining structure is an air-isolated beam lead device.

3,680,206

ASSEMBLIES OF SEMICONDUCTOR DEVICES HAVING MOUNTING PILLARS AS CIRCUIT CONNECTIONS

John Tudor Roberts, Cheadle Hulme, Cheadle, Cheshire, England, assignor to Ferranti, Limited, Lancashire, England

Filed June 23, 1969, Ser. No. 835,556
Int. Cl. B01j 17/00; H01l 5/00
U.S. Cl. 29—580 9 Claims



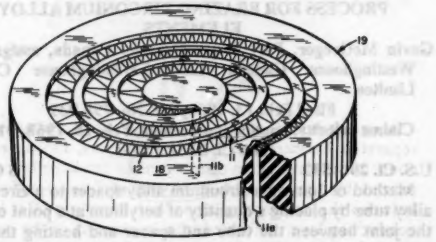
Mounting pillars comprising electrical connections between device contact pads on a semiconductor wafer and conductors, the conductors possibly being on a substrate member, are formed by initially forming protrusions on the substrate member, if provided, or the semiconductor wafer and depositing conductive material over the protrusions to provide respectively conductors or device contact pads having integral mounting pillars.

3,680,207

METHOD OF MAKING ELECTRICAL HEATING UNITS

James A. Belmonte, Elmira, and Thomas Williams, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 28, 1971, Ser. No. 110,395
Int. Cl. H06b 3/00
U.S. Cl. 29—611 7 Claims



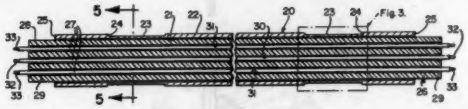
A method of making an electrical heating unit which includes the steps of shaping a strip of electrical resistance wire into a pattern for the heating element of the unit, contacting one of the planar surface os the shaped strip against a masking member shaped in a pattern corresponding to that of the shaped strip, flowing an insulating and hardenable material over the remaining exposed part of the strip to encapsulate the exposed part and then hardening the material, and removing the masking from in contact with the strip to expose the unencapsulated surface of the strip.

3,680,208

METHOD OF MAKING ELECTRICAL PENETRANT STRUCTURE

Frederick G. Bohne, Buffalo, and Mark O. Johnson, Grand Island, both of N.Y., assignors to Conax Corporation, Buffalo, N.Y.

Division of Ser. No. 748,715, July 30, 1968, Pat. No. 3,601,526. This application May 20, 1970, Ser. No. 51,031
Int. Cl. H01b *13/00*; H05k *3/00*
U.S. Cl. 29—624 5 Claims



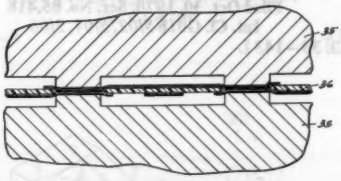
An electrical penetrant structure, and a method of making the same, are disclosed for feeding sealingly one or more electrical conductors through a wall, such as the containment vessel wall in a nuclear-powered electrical generating station.

3,680,209

METHOD OF FORMING STACKED CIRCUIT BOARDS

Hans Juergen Hacke, Munich, Germany, assignor to Siemens Aktiengesellschaft

Filed April 30, 1970, Ser. No. 33,255
Claims priority, application Germany, May 7, 1970, P 19 23 199.3
Int. Cl. H05k *3/00*
U.S. Cl. 29—625 10 Claims



A circuit board, which has at least two conducting layers separated by interposed insulating layers, having electrical connections through an opening in the insulator layer characterized by the connection having surface-to-surface bond between the conducting layers with a portion of at least one conducting layer deformed into an opening of the separating insulating layer. The circuit board is formed by superimposing a plurality of layers into a stack with the insulating layers between adjacent conducting metal layers. Then heat and pressure are applied to the stack of superimposed layers to force the conducting layers into surface-to-surface engagement and form the bonding of the connection. In the preferred embodiments a filler material such as a metal or metal alloy having a low melting point is provided preferably as a small area coatings on the conducting layers in a pattern corresponding to the pattern of the connections. Complex circuit boards having a large number of conducting layers, can be formed by first forming a core in accordance with the invention and then interposing the core between additional insulating and conducting layers and repeating the heating and pressing step.

3,680,210

PROTECTIVE MAGNIFYING ELEMENT FOR TOENAIL CLIPPERS

Charles Steinman, 161 Lawrence St., Mount Vernon, N.Y.

Filed March 22, 1971, Ser. No. 126,608
Int. Cl. B26b *17/04*
U.S. Cl. 30—28 4 Claims

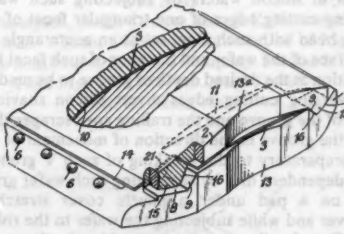
A clipper device such as a toenail clippers is provided with a hollow dome-shaped element serving as a magnifying lens and rigidly secured to the outer edge of one of the clipper blades. The lens is wide enough to cover both blades when their cutting edges are in abutting position, thus allowing the user to obtain a close magnified view of what he is cutting, with the dome-shaped element acting as a barrier to prevent pieces of clipped nail from being propelled into the face of the user.

3,680,211

SAFETY RAZOR WITH BLADE ALIGNING MEANS

Karl M. Keck, 2155 Silver Palm West, Boca Raton, Fla.

Filed June 15, 1970, Ser. No. 46,422
Int. Cl. B26b *21/18, 21/40*
U.S. Cl. 30—75 3 Claims



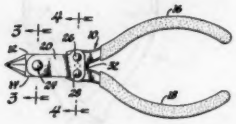
A safety razor of the type in which a flexible blade is clampingly held between a table and a cap, the cap and table being respectively provided at corner points with complementary parts that include cam surfaces, the function of which is to attain a well-defined position of the blade, both longitudinally and transversely and to insure the precise position of its cutting edges to provide improved shaving results. Another feature of the invention resides in the provision of grooves in the cap and table and whereby shaving cream or soap will be dispersed or spread over the face rather than being entirely removed during the shaving operation, thereby providing a lubricant present during secondary strokes of the razor while shaving.

3,680,212

PIVOT ASSEMBLY FOR TOOLS AND THE LIKE

Walter J. Rozmus, Hubbardsville, N.Y., assignor to Walter J. Rozmus, Hubbardsville, N.Y.; James R. Lizenby, Birmingham; William R. Dahlin, Birmingham and Frank L. Moncher, Farmington, Mich., part interest to each

Filed Sept. 17, 1970, Ser. No. 73,157
Int. Cl. B25b 7/12, 7/06
U.S. Cl. 30—266 **11 Claims**



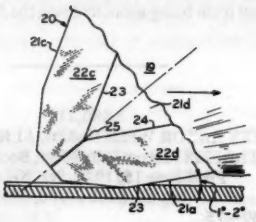
A compound pivot, pliers-type cutter having noncrossing jaws and handles and a pivot defined by arcuate channels in opposite faces of the jaws and rings disposed in the channels.

3,680,213

METHOD OF GROOVING SEMICONDUCTOR WAFER FOR THE DIVIDING THEREOF

Karl O. Reichert, 1179 Lochinvar Ave., Sunnyvale, Calif.

Filed Feb. 3, 1969, Ser. No. 796,127
Int. Cl. B43l 13/00
U.S. Cl. 33—18 R **6 Claims**



The method of uniformly shaving identical side walls of V grooves in silicon wafers by subjecting such wafer to the diverging cutting edges of one triangular facet of a diamond cutting head with such facet set at an acute angle relative to the surface of the wafer and the apex of such facet in a trailing disposition at the desired depth of groove to be made such that the diverging cutting edges divert silicon shavings toward center of the groove and the trailing apex scrapes the shavings out of the groove in the direction of movement of the cutting head preparatory to the breaking of such V grooved wafers into independent dies by supporting such wafer grooved face down on a pad under a plastic cover stretched tightly thereover and while subjecting the wafer to the rolling action of a roller of a diameter determined by the distance between the V grooves formed on such wafer.

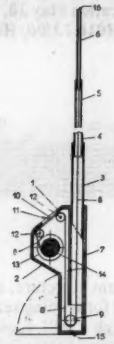
3,680,214

LINEAR EXTENSIBLE MEASURING INSTRUMENT WITH TELESCOPIC MEMBERS

Andre Quenot, Boite Postale 256, 25 Besancon, Doubs, France

Continuation-in-part of Ser. No. 715,695, March 25, 1968, abandoned. This application March 6, 1970, Ser. No. 17,144
Claims priority, application France, July 24, 1967, 67115391
Int. Cl. G01b 3/22
U.S. Cl. 33—169 R **9 Claims**

A linear extensible and retractible measuring instrument is provided with telescopic members combined with a casing in which is housed the measuring and reading mechanism. The instrument has a graduated measuring tape guided along a constant path by a suitable guiding means and passing in front of a transparent reading window. The instrument also has locking means for releasably locking the telescopic members in any desired position.

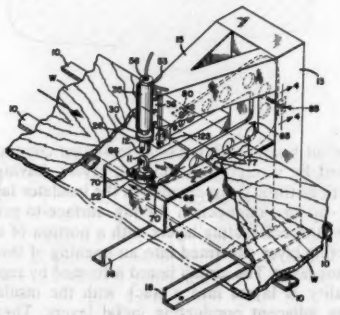


3,680,215

CONTINUOUS THICKNESS MEASURING APPARATUS FOR VENEER AND OTHER WEB MATERIAL

Irving L. Plough, Everett, Wash., assignor to The Black Clawson Company, Hamilton, Ohio

Filed Oct. 30, 1970, Ser. No. 85,418
Int. Cl. G01b 5/02, 5/04, 5/06
U.S. Cl. 33—143 L **7 Claims**



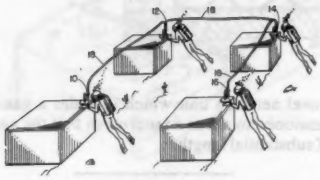
In apparatus including a pair of relatively movable feeler wheels for continuously measuring the thickness of a traveling web, the stationary part of the transducer which detects the movements of the movable wheel is mounted on a supplemental frame fixed with relation to the support for the stationary wheel and capable of sufficient movement with respect to the structure supporting the movable wheel to be independent of shock and vibration forces affecting that structure.

3,680,216

METHOD OF MEASURING THE RELATIVE DEPTH BETWEEN TWO OR MORE UNDERWATER LOCATIONS

Lawrence W. Hallanger, Osnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 24, 1971, Ser. No. 118,247
Int. Cl. G01c 5/04
U.S. Cl. 33—301 3 Claims



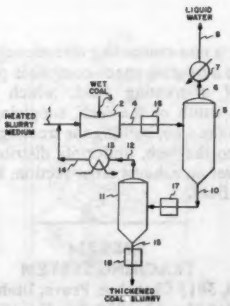
A method of measuring the relative underwater depth between two or more underwater locations utilizing a gas filled hose connected at each end to a transparent vertically extending measuring tube with the lower end of both tubes open to provide a gas-water interface. Thus when the tube at one end of the hose is moved up or down, depending on the depth of the underwater terrain, the gas-water interface shifts relative to that measuring tube to maintain a level with the gas water interface(s) and the other tube(s).

3,680,217

COAL PROCESSING

Robert F. Chapman, Lafayette Hill, Pa., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Oct. 21, 1970, Ser. No. 82,735
Int. Cl. F26b
U.S. Cl. 34—9 5 Claims



A method and apparatus for removing moisture from coal and for comminuting coal.

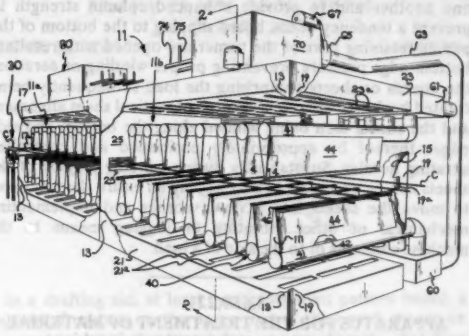
3,680,218

DRYING CHAMBER APPARATUS AND METHOD

James C. Belue, Sylvania, and Weston C. Jones, Toledo, both of Ohio, assignors to Owens-Corning Fiberglas Corporation

Filed May 7, 1969, Ser. No. 822,566
Int. Cl. F26b 3/10
U.S. Cl. 34—10 11 Claims

Method and apparatus for heat drying a continuous strand material by the expedient of exposing a moving array of individual strand material to blasts or jets of the heating medium as enhances accomplishment of the drying while simultaneously supporting said strand material.



3,680,219

PROCESS FOR STEAM STRAIGHTENING AND KILN DRYING LUMBER

Peter Koch, Alexandria, La., assignor to The United States of America as represented by the Secretary of Agriculture

Filed Sept. 22, 1970, Ser. No. 74,484
Int. Cl. F26b 7/00
U.S. Cl. 34—13.4 1 Claim

A process for steam straightening and kiln drying lumber, the lumber being held under total restraint with respect to warping during the process.

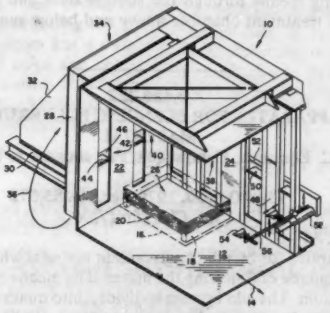
The lumber is steam straightened and kiln dried to a moisture content of nine percent using a cross-circulation air velocity of 1000 f.p.m. at dry and wet bulb temperatures of 240° F and 160° F for a first interval followed by a second interval at 195° F and 185° F. The lumber is cooled prior to being released from restraint.

3,680,220

SHEET WINDING AND TURNING METHOD AND SYSTEM

Gene C. Thompson, Hollis Center; Joseph E. Radomski, Saco, and David E. Wilson, Cumberland Center, all of Maine, assignors to Southworth Machine Company, Portland, Maine

Filed May 28, 1971, Ser. No. 147,944
Int. Cl. F26b 5/00
U.S. Cl. 34—23 9 Claims



A winding and turning device for printed paperboard sheets and the like wherein a stack of horizontal sheets comprising

the stack are rotated in the vertical plane, while being confinedly supported, beyond 90° with the boards being projected against a curved plate to implement breaking any ink pack which may be in a load due to movement of the sheets against one another and to provide enhanced column strength to prevent a tendency of the board slipping to the bottom of the pile as retaining jaws of the turner are opened with resultant bottom edge pressure preventing proper winding or aeration, the boards or sheets comprising the load subsequently being rotated back to a 90° orientation or of vertical sheet alignment and the sheets then being winded along the bottom and side edges thereof by appropriately positioned and controlled aerating nozzles. Substantially during winding jogging of the sheets can be accomplished by tipping an entire sheet support to move the sheets into a down corner and implementing mechanical or other vibrating or jogging means to the machine elements or to the side of a load.

3,680,221

APPARATUS FOR THE TREATMENT OF MATERIAL LENGTHS OR SLIVER-TYPE MATERIAL

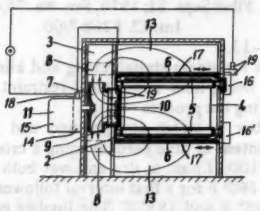
Heinz Fleissner, Egelsbach bie Frankfurt (Main), Germany, assignor to Vepa AG

Filed Nov. 27, 1968, Ser. No. 779,586

Claims priority, application Germany, Nov. 28, 1967, P 16 35 356.3

Int. Cl. F26b *21/00*

U.S. Cl. 34—54 **15 Claims**



The present disclosure is directed to an apparatus for the treatment of material lengths or of sliver-type textile materials. The apparatus comprises a substantially closed housing containing a treatment chamber and a fan chamber, at least two rows of conveying means rotatably disposed in the treatment chamber to provide for the continuous and alternate guiding of the material therethrough, fan means disposed in the fan chamber for circulating the treatment medium, suction duct means disposed between the rows of conveying means at the partition means, said fan means drawing the treatment medium from the treatment chamber between the rows of conveying means through the suction duct and returning it into the treatment chamber above and below said conveying means.

3,680,222

APPARATUS FOR BLENDING PULVERULENT MATERIAL

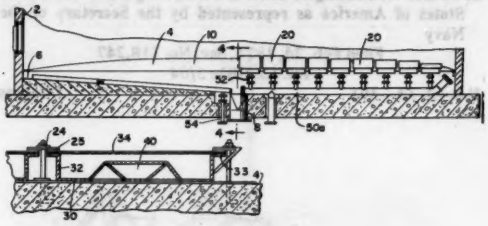
James C. Edmonds, Catasauqua, Pa., assignor to Fuller Company

Filed Oct. 30, 1970, Ser. No. 85,572

Int. Cl. F26b *17/00*

U.S. Cl. 34—57 A **7 Claims**

Apparatus for blending pulverulent material which employs the technique of fluidizing the material by means of an aerated silo bottom. The silo bottom is divided into quadrants with air under pressure supplied to each quadrant. While each of the quadrants is being aerated, a greater volume of air may be supplied to any one of the quadrants so that the material in that quadrant will spill over onto the adjacent quadrants and the material in the adjacent quadrants will flow into that quadrant to thereby blend the material in the silo. The apparatus em-



ploys a novel aeration unit which includes a gas conducting pipe dimensioned to act as a receiver so that the aeration units may be of substantial length.

3,680,223

APPARATUS FOR A NON-CONTACTING DIRECTIONAL CONTROL OF A WEB

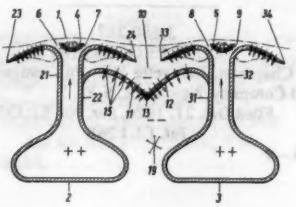
Hilmar Vits, Langenfeld, Germany, assignor to Maschinenbau Vits GmbH

Filed Sept. 28, 1970, Ser. No. 75,948

Claims priority, application Germany, Oct. 11, 1969, P 19 51 345.2

Int. Cl. F26b *13/00*

U.S. Cl. 34—156 **6 Claims**



A process for a non-contacting directional control of a web moving through a treating space comprises producing at least one stream of a treating fluid, which stream extends throughout the width of the web, supplying said stream of treating fluid to the web, baffling the treating fluid when it has been supplied to the web, uniformly distributing the baffled treating fluid over an exhaust cross-section, and then exhausting the treating fluid.

3,680,224

TEACHING SYSTEM

Wendell H. Hall, 3015 Cherokee, Provo, Utah

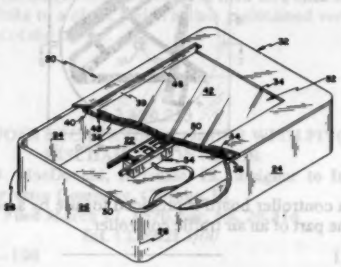
Filed May 13, 1970, Ser. No. 36,835

Int. Cl. G09b *3/00*

U.S. Cl. 35—9 E **7 Claims**

A light transmitting window upon which is superimposed a translucent template having various normally obscured information for use in teaching and a lamp assembly projecting a light beam which is selectively positionable relative to the window. The lamp assembly may have a plurality of separate compartments each of which can be provided with independently actuated lamps to illuminate only a segment of the window, the segment having a configuration corresponding to a single body of information on the template so that the body of information is made visible by the illumination. Alternatively, the lamp may remain stationary and a movable shutter assembly

used to direct a light beam of selected configuration to various locations on the window. Instructions, questions and other information is made audibly available with an audio recording apparatus. A method of teaching includes illuminating a portion of the template to reveal a question or the like allowing a



student to respond by selecting from among alternative answers and, thereafter, illuminating another portion of the template to reveal the most appropriate of the alternative answers or comments on the selected answer. An alternative method includes first audibly communicating questions or information to the student.

3,680,225

ASSEMBLY KIT FOR MAKING A DECORATIVE DRAWING BOARD

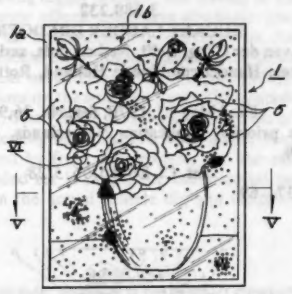
Masao Ishida, Kiyomachiborikaikan Bldg., 126, 1-chome, Kiyomachibori, Nishi-ku, Osaka, Japan

Filed May 18, 1970, Ser. No. 38,443

Claims priority, application Japan, Nov. 19, 1969, 44/110331

Int. Cl. G09b *29/00*

U.S. Cl. 35—26 **4 Claims**



A decorative drawing board comprising a ground board having on its upper surface an original picture coated with a layer of pressure-sensitive adhesive material. An assembly of variously colored spherical beads are selectively affixed to the adhesive layer in a pattern for reproducing the original picture. The present invention is further drawn to a kit for making the above described decorative drawing board which includes the ground board and assembly of colored beads as individual components.

3,680,226

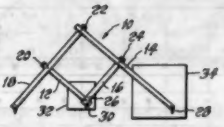
DRAFTING AID

Havel Karel, P.O. Box 66, Station "M", Toronto 21, Ontario, Canada

Filed Feb. 25, 1971, Ser. No. 118,710

Int. Cl. B43l *13/10*

U.S. Cl. 35—26 **8 Claims**



In a drafting aid, at least one transparent pattern board, a pattern of rabbets on the upper part of the board, means on the underside of the board for securing thereto sketching paper having thereon a rough sketch to be formalized, a pantograph having a tracing point running inside of the rabbet, marking means supported by the pantograph and simultaneously movable with the tracing point and a sheet of paper under the marking means upon which the marking means imprints a formal drawing of the sketch secured to the underside of the pattern board. The aid is particularly useful for drawing transistorized circuits from rough circuit diagrams.

3,680,227

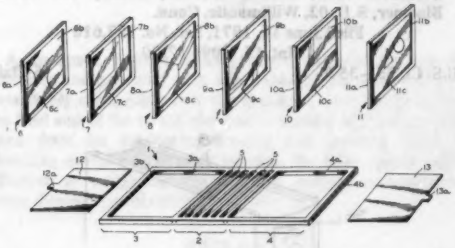
MULTIPLE DESIGN VIEWER

James Clinton Pavelle, 4743 Southland Ave., Alexandria, Va.

Filed Oct. 12, 1970, Ser. No. 79,873

Int. Cl. G09b *1/06*

U.S. Cl. 35—27 **5 Claims**



A flat support structure has transverse support slots for supporting color and configuration plates and framed compartments for positioning tint plates. Each of the color and configuration plates has a different design consisting of a combination of color and configuration. Each of the tint plates consists of a sheet of differently colored material. The support structure may have hinges such that the device may be folded into a portable carrying case.

3,680,228

TOY ELECTRIC COMPUTER

Samuel S. Chamecki, Paris, France, assignor to Les Jouets Rationnels

Filed Oct. 27, 1970, Ser. No. 84,263

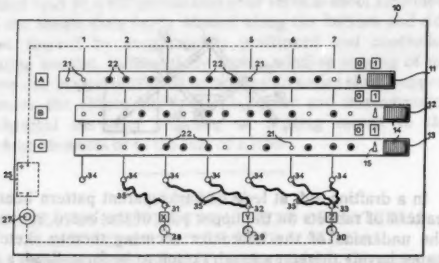
Claims priority, application France, Nov. 27, 1969, 6940860

Int. Cl. G09b *5/00*

U.S. Cl. 35—30 **3 Claims**

A toy electrical computer comprises a set of switches arranged in lines and in columns and mobile bars representing

input data and movable into two different positions. Each mobile bar is provided with opening therein for the reception of detachable pegs having conducting portions, the number and arrangement of the pegs in the openings being variable in dependence upon the selected program. A plurality of indicators each represent an output datum and each is connectable between an electric current supply source and one or more of



the columns of switches in accordance with the selected program. The switches of each column are connected in series by means of substantially C-shaped, resilient conducting blades the two legs of which respectively form terminals of two adjacent switches of the column. The adjacent legs of adjacent blades in a column are insulated from each other except when electrically interconnected by way of said peg conducting portion.

3,680,229

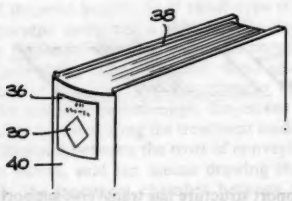
APPARATUS TO MATCH LEVELS OF READING ABILITY TO CORRESPONDING LEVELS OF READING MATTER

Shelagh Serrie, 81 Pattagansett Road; Seamus McGrady, 75 Columbus Ave., both of Niantic, Conn., and Richard Bloomer, R.D. 02, Willimantic, Conn.

Filed June 16, 1971, Ser. No. 153,610

Int. Cl. G09b *17/00*

U.S. Cl. 35—35 R **5 Claims**



Apparatus for matching a student's reading level to particular book readability comprising two series of distinctive corresponding symbols, with one of the first series assigned to a student on the basis of his reading level and one of the second series to each book on the basis of its reading difficulty, identical symbols of the two series indicating that a particular book meets the reading level of the student.

3,680,230

PRACTICE DEVICE

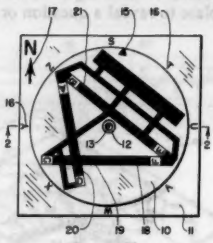
Philip H. Thompson, 1668 Euclid, St. Paul, Minn.

Continuation-in-part of Ser. No. 832,033, June 10, 1969, abandoned. This application Dec. 14, 1970, Ser. No. 97,952

Int. Cl. G09b *1/22*

U.S. Cl. 35—74 **15 Claims**

Devices and methods are disclosed for use in ground practice and for game purposes to teach proper runway selection for landing at a simulated runway layout. A pilot board is provided for use by a person assuming the part of an aircraft pilot;



and a controller board is provided for use by a person assuming the part of an air traffic controller.

3,680,231

FOOTWEAR

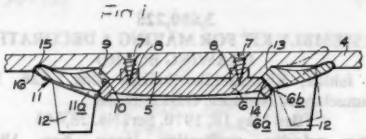
Joseph Francis Dymond, "Rosendale," Eveswell Park Road, Newport, Monmouthshire, England

Filed Dec. 7, 1970, Ser. No. 95,519

Claims priority, application Great Britain, Dec. 10, 1969, 60,234/69; July 25, 1970, 36,157/70

Int. Cl. A43b *23/28*

U.S. Cl. 36—59 R **9 Claims**



An article of footwear which has a rotatable portion on its sole or heel to enable a wearer of the footwear readily to pivot on one foot. The invention also includes a device having a rotatable ground-engaging portion and a support member for rotatably retaining said portion on an article of footwear.

3,680,232

BUCKET LADDER DREDGER

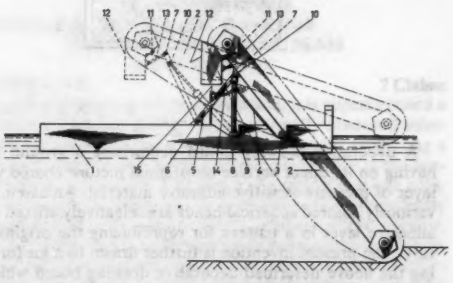
Cornelis van der Gaag, Delft, Netherlands, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands

Filed May 13, 1970, Ser. No. 36,983

Claims priority, application Netherlands, May 13, 1969, 07346/69

Int. Cl. E02f *5/06, 5/28*

U.S. Cl. 37—69 **5 Claims**



A bucket dredger comprises a pontoon and a bucket ladder mounted on the pontoon for bodily vertical swinging move-

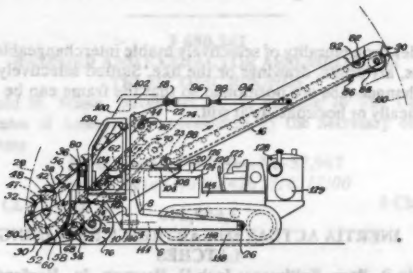
ment relative to the pontoon. The ladder mount comprises vertically swinging arms pivotally interconnected to the pontoon and to the ladder and jacks for swinging the arms. The ladder carries rollers that roll on an upwardly inclined track on the pontoon, the summit of the track being intermediate its ends so that in an upwardly swung position the ladder will be horizontal. The support arms extend beyond the point of pivotal connection to the ladder and at their free ends are connected by links to a chute which is thus maintained vertical in all positions of the ladder.

3,680,233

CONTINUOUS EXCAVATING LOADER WITH PIVOTAL DISCHARGE CONVEYOR

Raymore D. MacDonald, Hinsdale, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed March 17, 1970, Ser. No. 20,314
Int. Cl. E02f *5/00*
U.S. Cl. 37—108 **1 Claim**



Tractor and front end continuous loader attachment for same to form continuous excavating vehicle comprising: a C-frame with legs thereon extending rearwardly; a front-mounted, mobile scraping frame secured with a fore and aft extending pivot to, and pushed by, the C-frame; a tractor included in the C-frame to push thereon by means of trunnions and in a position between the scraping frame and the ground; the scraping frame having a front-mounted elevator provided with a cooperating digger thereon, and having at the rear end a swivel conveyor effective for side discharge and provided with an inlet; an interconnecting conveyor on the scraping frame communicatively in tandem between the front-mounted elevator and rear mounted swivel conveyor; and independent wheel suspensions on the scraping frame differentially adjustable to tilt same. The vehicle avoids ponderousness of transport machines possessing large buckets such as the buckets commonly possessed by front end loaders, and the only storage capacity provided for is simply for the material currently in transit between the actual vehicle dig and vehicle discharge stations.

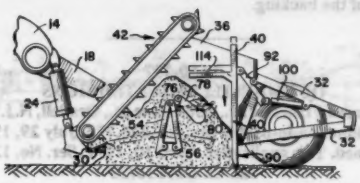
3,680,234

EARTH MOVING VEHICLE DUMPING STRUCTURE

Thomas H. Scott, Jackson, Miss., assignor to M-R-S Manufacturing Company, Flora, Miss.

Filed March 2, 1970, Ser. No. 15,475
Int. Cl. E02f *3/02*
U.S. Cl. 37—129 **25 Claims**

A vehicle for excavating earth or other similar material and then transporting same to a site for dumping. The vehicle includes an open ended bowl construction comprised of a pair of side walls, a base wall and a rear wall arrangement. The base wall construction provides the floor area for supporting the earth material, and is defined by a pair of hingedly connected panels movable to an open condition so as to provide a pair of dumping openings on opposite sides thereof. The rear wall arrangement is provided by a rear panel member mounted for both vertical and retractive movement relative to the base wall construction. The vertical movement thus afforded permits the lower portion of the rear wall member to function as a spreader blade during dumping, while the retractive movement facilitates the overall dumping operation.

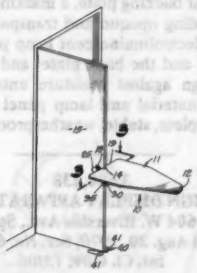


3,680,235

LEGLESS IRONING BOARD

Rudolph E. Leemhuis, 2612 Charlinda Ave., West Covina, Calif.

Filed Dec. 2, 1970, Ser. No. 94,279
In . Cl. D06f *81/06*
U.S. Cl. 38—104 **9 Claims**



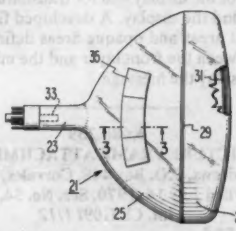
A compact, legless ironing board suitable for use by travelers and provided with adjustable means at its heel end detachably engageable over the shanks of door knobs to hold the heel end of the board clamped crosswise of the edge of an open door for emergency ironing and pressing tasks. A chucking device is insertable beneath the door corner and is effective to wedge the door against hinging movement in either direction until released.

3,680,236

ELECTRON TUBE HAVING TAMPER-DETECTABLE LABEL ATTACHED THERETO

Samuel Broughton Deal, Lancaster, and Donald Walter Bartch, Columbia, both of Pa., assignors to RCA Corporation

Filed Aug. 21, 1970, Ser. No. 65,802
Int. Cl. G09f *3/02*
U.S. Cl. 40—2.2 **9 Claims**



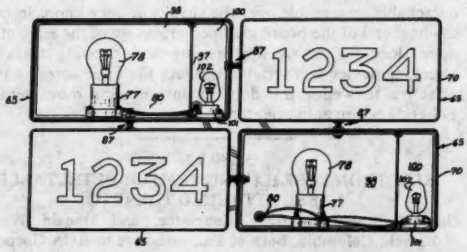
An electron tube, such as a television-picture tube, compris-

ing a sealed envelope having a cathode and an anode therein, a label comprising a dye-stainable backing adhered to the external surface of said envelope, the label and a layer including a solvent-soluble dye contiguous with at least a portion of a surface of the backing.

3,680,237
OUTDOOR ILLUMINATED SIGNS
John Gerard Finnerty, Sr., 356 Grove St., Oradell, N.J.
Continuation-in-part of Ser. No. 845,778, July 29, 1969, abandoned. This application April 30, 1971, Ser. No. 138,904
Int. Cl. G09f 13/22
U.S. Cl. 40—130 M **13 Claims**

The outdoor illuminated sign is composed of a front transparent plate, a rear backing plate, a masking material between such plates providing opaque and transparent areas forming sign indicia, an electroluminescent lamp panel between such masking material and the back plate, and means sealing the edges of said sign against moisture entering between the plates, masking material and lamp panel and holding them together as a complete, stable, weatherproof unit.

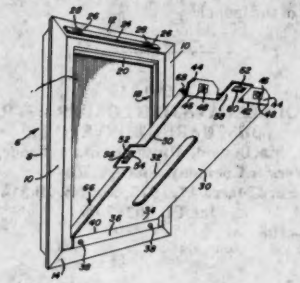
3,680,238
SIGN DISPLAY APPARATUS
John L. Arnold, 1604 W. Riverside Ave., Spokane, Wash.
Filed Aug. 20, 1970, Ser. No. 65,537
Int. Cl. G09f 13/06
U.S. Cl. 40—132 R **5 Claims**



A sign display is described having a plurality of layers including a transparent front layer which absorbs ultraviolet light and transmits visible light. Behind the front layer is located a milk-white translucent layer for reflecting sunlight from the front of the display and for transmitting artificial light generated behind the display. A developed film negative having transparent areas and opaque areas defining a message is interposed between the front layer and the milk-white translucent area to display the message.

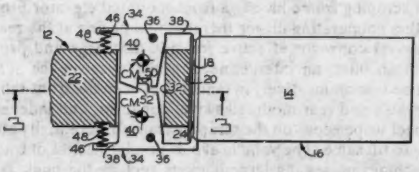
3,680,239
PICTURE FRAME ATTACHMENT
Willard H. Andrews, P.O. Box 448, Corrales, N. Mex.
Filed July 14, 1970, Ser. No. 54,806
Int. Cl. G09f 1/12
U.S. Cl. 40—152.1 **11 Claims**

An attachment expressly adapted to be operatively mounted on rearward faces of longitudinal side members and transverse end members, respectively, of a picture frame. It comprises a flat-faced cover plate which is hinged at one end, detachably fastened at the other end, and when closed spans and covers the rear side of a glass-covered sight opening. The outwardly or forwardly disposed side of the plate is provided with a box-like pocket which is open at one end and provides a



holder for a plurality of selectively usable interchangeable pictures, art-prints, drawings or the like. Slotted selectively usable hanger-tabs are positioned so that the frame can be hung vertically or horizontally at will.

3,680,240
INERTIA ACTUATED CARTRIDGE RETAINING LATCHES
Irwin R. Barr, Baltimore; Jack H. Hayman, Jr., Harford, and Harold A. Wilkening, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Army
Filed Dec. 18, 1970, Ser. No. 99,559
Int. Cl. F41c 27/00, 27/06, 15/00
U.S. Cl. 42—1 Q **5 Claims**

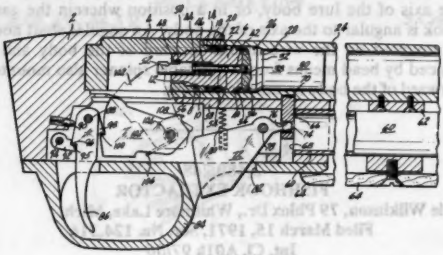


A firearm includes inertial cartridge retaining latches which are actuated to release the fired cartridge case from the launcher responsive to cartridge discharge forces.

3,680,241
IMPACT IGNITION SHOTGUN FOR FIRING CASELESS AMMUNITION
Marcus Ramsay, New Haven, Conn., assignor to Olin Corporation
Filed May 20, 1970, Ser. No. 38,992
Int. Cl. F41c 7/00, 17/08
U.S. Cl. 42—10 **7 Claims**

A shotgun for firing caseless ammunition, the shotgun having a bolt member immovably mounted in the receiver. The barrel is slidably connected to the receiver with forward movement of the barrel being operative to open the breech to permit loading. Reciprocating locking means are mounted in

the receiver for engagement with the barrel to lock the latter in a breech-closed position and a blocking member is operatively connected to the locking to block the hammer from

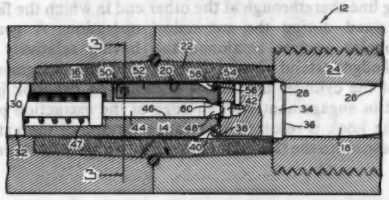


contacting the firing pin when the barrel is not locked in its breech-closed position, thus the gun cannot be accidentally fired when the breech is not locked closed.

3,680,242
RAMMER AND EXTRACTOR ASSEMBLY FOR TELESCOPIC ROUNDS

Harold H. Wiese, Davenport, Iowa, assignor to The United States of America as represented by the Secretary of the Army

Filed July 24, 1970, Ser. No. 57,967
Int. Cl. F41c *15/00*; F42b *5/18, 11/00*
U.S. Cl. 42—25 **5 Claims**



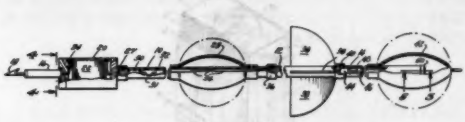
In cooperation with a caseless round of telescopic configuration, a longitudinally reciprocating plunger responsive to forward travel thereof moves the round projectile forwardly in the body member for insertion into the barrel bore for discharge. The plunger carries a firing pin which is spring-biased to a forward round impacting position and is driven rearwardly responsive to discharge gas pressure. A latch pivotally carried by the plunger is pivoted by the striker portion of the firing pin into engagement with a flange formed on the rear end of the projectile when the firing pin goes into its forward position and is held in engagement with the flange if the round fails to discharge thereby maintaining connection between the projectile and the plunger for withdrawal of the projectile back into the body member during rearward travel of the plunger.

3,680,243
TRANQUILIZING DART FOR MARINE USE

Frank R. Braun, 1290 Rowland Ave., Camarillo, Calif.

Filed Nov. 18, 1970, Ser. No. 90,554
Int. Cl. A01k *81/04*
U.S. Cl. 43—6 **7 Claims**

A hypodermic dart designed to inject a tranquilizing substance into whales or other marine animals to be captured. The dart is combined with a device for marking the location of the animal innoculated in this manner so that it may readily be

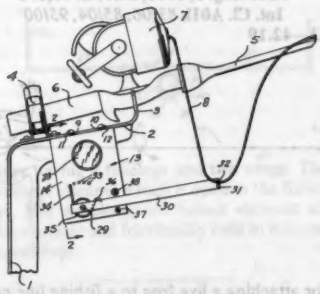


identified and followed visually and/or by radar until such time as the drug has taken effect and the creature is immobilized.

3,680,244
FISHING SIGNAL

James S. Cala, Keithwood Dr., R.D. #3, Valencia, Pa.

Filed July 14, 1970, Ser. No. 54,753
Int. Cl. A01k *97/12*
U.S. Cl. 43—17 **2 Claims**



A signal device for indicating the bite of a fish on a fishing line is attached to a support for a fishing rod and comprises a housing of current-conducting material for a battery and a battery-operated lamp. A lever of current-conducting material is pivotally mounted on the housing and the fishing line engages the end of the lever. An electrical contact is positioned on the housing near the lever. A pull on the line will pivot the lever into engagement with the contact to complete the circuit to the lamp and provide a visual signal to the fisherman.

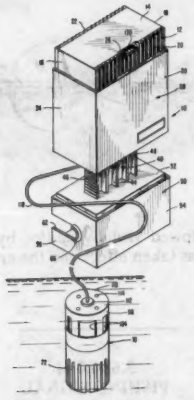
3,680,245
FISH ATTRACTING DEVICE

Ray G. Brooks, Irving, Tex., assignor to Product Promotions, Inc., Dallas, Tex.

Filed Oct. 1, 1970, Ser. No. 77,209
Int. Cl. A01k *97/00*
U.S. Cl. 43—17.1 **4 Claims**

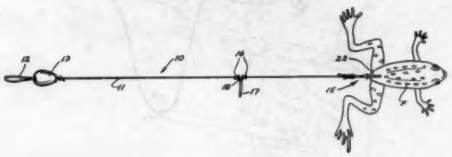
A module incorporating multiple attraction media for aquatic animals is suspended from a housing having a storage

area for the module and a housing for the energy source. The storage area and housing are interconnected by a reel for



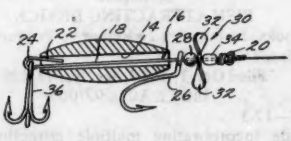
storage of a cord connecting the module and the housing, said reel having a cover slidably engaged with the housing and movable thereon.

3,680,246
FISHING RIG
Louis A. Florek, 1251 Peony Lane, Wayzata, Minn.
Filed Aug. 6, 1970, Ser. No. 61,671
Int. Cl. A01k *83/06, 85/04, 95/00*
U.S. Cl. 43—42.19 **4 Claims**



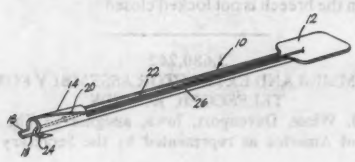
A rig for attaching a live frog to a fishing line comprising a leader formed of a single length of monofilament line having a sinker mounted on one end, a hook means on the other end, and a spinner mounted at an intermediate position thereon. The hook means has two integrally related hooks extending in diametrically opposing directions on a common vertical plane to facilitate impaling the rear end portion of the body of the frog on the lower hook with the other hook extending upwardly over said body portion leaving the head and frontal body portion of the frog free.

3,680,247
ARTIFICIAL FISHING LURE
Benjamin L. McKenzie, 155 Sir Oliver Rd, Norfolk, Va.
Filed June 1, 1970, Ser. No. 42,067
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.17 **7 Claims**



An artificial fishing lure comprising a body having a longitudinal bore therethrough to hold a wire means extending through the bore so that the wire means can be positioned in a plurality of positions, either allowing a gang hook mounted on the wire means to be held with its shaft substantially parallel to the axis of the lure body, or in a position wherein the gang hook is angular to the axis of the body. An angular shaft hook is mounted on the wire means forward of the body and is spaced by bead means from a rotatable spinner also mounted forward of the body on the wire means.

3,680,248
FISHHOOK EXTRACTOR
Olie Wilkinson, 79 Phlox Dr., Whitmore Lake, Mich.
Filed March 15, 1971, Ser. No. 124,316
Int. Cl. A01k *97/00*
U.S. Cl. 43—53.5 **6 Claims**

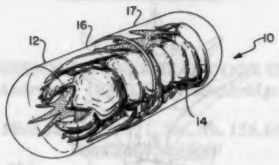


Apparatus is disclosed for the extraction or removal of a hook from a fish. The fishhook extractor has a flat spoon-like handle at one end and a hollow cylindrical traction portion having a spiral slot through a wall portion thereof for passing a fishing line therethrough at the other end in which the fish line is retained during the extraction operation. A generally rectangular arcuate sectioned tab having relatively sharp lateral edges extend beyond the other end from a segment portion of the cylinder that is not slotted. The fishhook is positioned in engagement with an edge of the extraction portion and the hook is released by relative turning of the extractor with respect to the fish and removed by withdrawal therefrom.

3,680,249
ARTIFICIAL FISHING LURE
Melchior S. Chiarenza, 15 Grassy Pond, Smithtown, N.Y.
Filed Aug. 20, 1970, Ser. No. 65,529
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.06 **3 Claims**

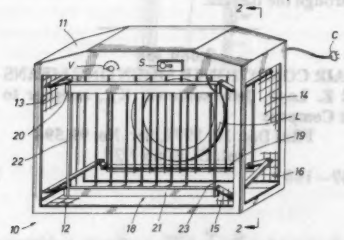
An artificial fishing lure having a centrally and longitudinally weighted body section with side fins thereon and a resilient tail section secured thereto wherein the weight and fins stabilize the lure when the drawn through the water in a linear forward motion and the tail section undulates horizontally and vertically to simulate the swimming action of a bait fish.

3,680,250
ENCAPSULATED FISHING LURE
Glenn C. Hetrick, 2045 E. Parkway Dr., Altoona, Pa.
Filed Dec. 3, 1970, Ser. No. 94,922
Int. Cl. A01k 97/04
U.S. Cl. 43—54.5 R **5 Claims**



A soft, resilient fishing lure is folded and packaged within a water-soluble capsule. When the lure is to be used, the capsule is immersed in water, the capsule dissolves and the lure is released unfolding to its full size. The lure may then be attached to a hook in the usual fashion.

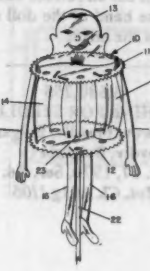
3,680,251
INSECT ELECTROCUTOR
Charles H. Springer, Route 1, Box 327, Alta Loma, Tex.
Filed June 12, 1970, Ser. No. 45,810
Int. Cl. A01m 1/22
U.S. Cl. 43—112 **4 Claims**



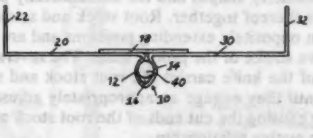
Two vertically spaced, electrical grids formed from a plurality of horizontally spaced, vertically extending rods are secured to each other by swivel type insulation mountings permitting the spacing and relative position between the rods forming the grids to be altered. The two grids are electrically insulated from each other and are supplied with electrical power by leads extending from a high voltage transformer. The insulating mounting of the grids permits the rods in each grid to be adjusted with respect to each other to prevent arcing from grid to grid and yet to provide maximum spacing between the two grids while still permitting arcing when insects enter the area included between the two grids. The controls and electrical power supply for the two grids are housed in a compact, weatherproof covering. An ultraviolet light supplied by the power source is disposed adjacent one of the grids to attract flying insects and the grids are encased within a screened housing to reduce shock hazard.

3,680,252
WIND POWERED SPINNING TOY
Charles Feltman, 1211 Chalet Terrace, Lakewood, N.J.
Filed May 26, 1971, Ser. No. 146,979
Int. Cl. A63h 33/40
U.S. Cl. 46—53 **6 Claims**

This invention consists of two horizontally disposed, vertically spaced and parallel plates of the same diameter that are held in the desired position and are connected together by two curved body members having a plurality of integrally formed L-shaped lugs on each end thereof snapped through elongated openings in the plates. A curved head is similarly secured to the upper side of the top plate from which downwardly extends two arms while two legs extend downward from the underside of the bottom plate. The just-described structure, which has the basic configuration of a person, is so mounted on a vertically disposed stick that is held in ones hand that the structure will either be rotated by the action of wind or rotated by movement of ones hand.



3,680,253
TOY GLIDER
Robert F. Spencer, 4731 30th St., N. W., Washington, D.C.
Filed Aug. 24, 1971, Ser. No. 174,339
Int. Cl. A63h 27/00
U.S. Cl. 46—79 **3 Claims**



A toy glider having a fuselage and two wings. The fuselage has a longitudinal channel which is open at the forward end of the fuselage, and an elongated ballast element slidably arranged in the channel and frictionally held in it in any one of a plurality of positions.

3,680,254
COMBINATION DOLL AND ACCESSORY IMPLEMENTS
Marvin I. Glass, Chicago; Howard J. Morrison, Highland Park, and Robert K. Allen, Frankfort, all of Ill., assignors to Marvin Glass & Associates
Filed Nov. 4, 1971, Ser. No. 196,849
Int. Cl. A63h 13/00, 33/26
U.S. Cl. 46—245 **19 Claims**

A combination doll and accessory set wherein the doll has a movable body and a movable limb connected to a tiltable head

and adapted to hold a simulated electric mixer, and the accessory set includes a mixing bowl and simulated electric mixer which may traverse about the interior of the bowl to mix ingredients deposited in the bowl and cause movement in the doll body and head with the circuit for activating the mixer including a portion of the hand of the doll and also including a portion of the handle of the mixer.

3,680,255

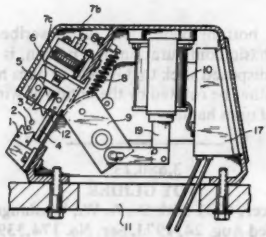
GRAFTING MACHINE FOR SEEDLING MATERIAL

Tzvetan Blagoev Grigorov, Plovdiv, Bulgaria, assignor to DMZ "Anton Ivanov", Plovdiv, Bulgaria

Filed Dec. 17, 1970, Ser. No. 99,164

Int. Cl. A01g *1/06*

U.S. Cl. 47—6 **7 Claims**



A machine for cutting the ends of root stock and scions to complementary shapes and for automatically positioning the cut ends thereof together. Root stock and scion are superimposed in oppositely extending positions and are cut off by the operative stroke of the profile knife. The reverse, inoperative stroke of the knife carries the root stock and scion with the knife until they engage an appropriately adjusted abutment, thereby causing the cut ends of the root stock and scion to be slid into mating relationship.

3,680,256

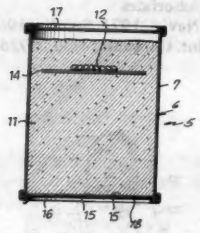
PLANT CULTIVATING DEVICE

Masami Kusumi, 3-10-306 Zengyo Danchi 3768-3 Fujisawa, Fujisawa, Japan

Filed Oct. 10, 1969, Ser. No. 865,270

Int. Cl. A01g *9/02*

U.S. Cl. 47—34.11 **1 Claim**



A plant cultivating device comprising a fluid-tight container in the form of a can or the like having an imperforate top which may be removed through the use of a can opener. A filling of soil-like material for growing seeds together with a plate having a coating of a fertilizer on which seeds are placed. The bottom of the container is perforated and an adhesively attached cover is secured for convenient removal from the bottom.

3,680,257

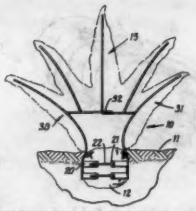
LANDSCAPING APPARATUS

Roy L. Rogers, 9880 W. 10th St., Indianapolis, Ind.

Filed June 15, 1970, Ser. No. 46,100

Int. Cl. A01g *17/06*

U.S. Cl. 47—17 **3 Claims**



Landscaping apparatus which is mounted on the balled roots of a plant and used to train the portions of the plant growing above the ground. Two sections are bolted together about the ball of an evergreen plant. The upper portion of the apparatus includes diverging guide rods to which the evergreen branches are tied for shaping of the evergreen. After the branches are tied to the guide rods, the evergreen is pruned or trimmed in order to give a hand shape or finger shape appearance. Each of the two sections includes a concave element with outwardly projecting flanges at its ends. The concave elements are attached together around the ball by means of bolts through the flanges.

3,680,258

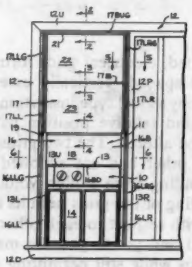
AIR CONDITIONER MOUNTING MEANS

Raymond E. Loyd, Jeffersontown, Ky., assignor to General Electric Company

Filed Dec. 18, 1970, Ser. No. 99,594

Int. Cl. E06b *7/28*

U.S. Cl. 49—168 **3 Claims**



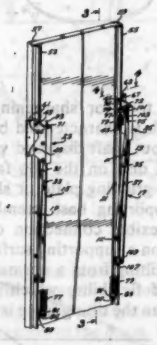
This invention produces readily adjustable and installable closure means for providing a fluid seal between a hollow casing of an air-conditioner unit, having top and bottom walls interconnected by a pair of spaced apart left and right side walls, and the left and right side and top walls of a generally vertically arranged opening, such as a window or the like, in which the casing is mounted with its bottom wall adjacent the bottom wall of the opening. Basically, the closure means comprises a telescopic pair of inverted generally U-shaped closure members. The first or bottom one of these two closure members includes a first pair of legs, whose left and right inner surfaces are respectively engageable with the casing left and right side walls and whose left and right outer surfaces are respectively engageable with the opening side walls, and a first bight portion, whose bottom is engageable with the casing top wall. The second or upper closure member includes a second pair of

legs, which are mounted in track means provided on the first pair of legs for slideable movement relative thereto and whose left and right outer surfaces are respectively engageable with the opening side walls, and a second bight portion, whose bottom is engageable with the top of the first bight portion and whose top is engageable with the opening top wall.

3,680,259
ASSEMBLED OVERHEAD DOOR UNIT

Donald D. Andresen, 10380 W. Whitesbridge Ave, Fresno, Calif.

Filed June 25, 1971, Ser. No. 156,662
Int. Cl. E05d *15/40*
U.S. Cl. 49—206 **7 Claims**



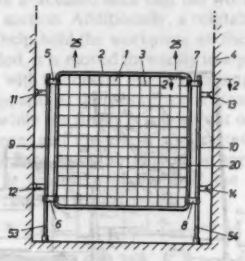
An assembled overhead door unit for hanging from a door frame defining a doorway and including a door panel having respective door mounting brackets secured to opposite sides thereof. First and second pairs of hinge arms are pivotably connected on their respective lower ends to the respective mounting brackets and project upwardly therefrom. A pair of frame mounting brackets are pivotably carried from the upper extremities of the respective hinge arms and respective tension springs are provided for connection between the respective hinge and door brackets for biasing such brackets toward one another. Connecting means is provided for releasably connecting the hinge and door brackets together in affixed relationship whereby the door unit may be positioned in such doorway, the frame brackets mounted to the door frame and the connecting means then released to free the door unit for operation.

3,680,260
FRAMES LOCKABLE BETWEEN STATIONARY SUPPORTS

Helmuth Bauer, 8331 Malgeisdorf, Munich, Germany

Filed May 11, 1970, Ser. No. 36,287
Claims priority, application Germany, May 9, 1971, P 19 23 881.8
Int. Cl. E06b *5/00*
U.S. Cl. 49—465 **1 Claim**

A frame, such as a guard screen in a doorway, is mounted between its supports by pivotable links which can be moved

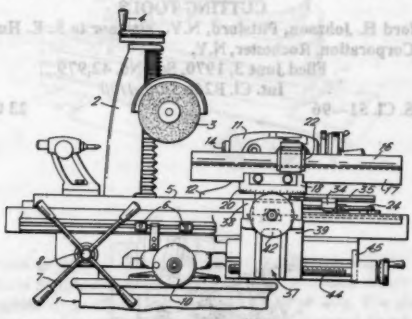


into a dead center condition, to lock the frame in effective position, by a simple push on the frame by hand.

3,680,261
GRINDING MACHINES

Maurice M. Ward, April Cottage, Ringwood Rd., Ferndown, England

Filed July 14, 1970, Ser. No. 54,756
Int. Cl. B24b *3/24*
U.S. Cl. 51—95 LH **5 Claims**



A spiral grinding machine of the kind in which rotation of the workpiece spindle simultaneously with its axial translation is controlled by the movement of a block along a so-called "sine bar" settable at a chosen angle to the spindle axis, the machine incorporating control means for bringing about a continuous change in the rate of rotation of the spindle relative to the speed of its axial translation, so as to permit the grinding of spirals of constant helix angle on conically tapered workpieces.

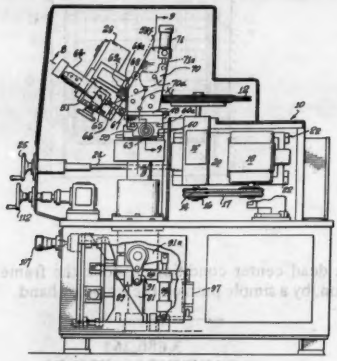
3,680,262
END MILL GRINDER

Max M. Aydelott, West Covina; Richard W. Beilfuss, Glendora, and Ernst Borchert, III, Pomona, all of Calif., assignors to Omark-Winslow Aerospace Tool Co., Portland, Oreg.

Filed Nov. 3, 1969, Ser. No. 873,270
Int. Cl. B24b *9/00*
U.S. Cl. 51—96 **15 Claims**

A novel grinder is provided for notching and gashing end mills in order to grind novel and improved shapes of the cutting edges and land or tooth faces of the end mill. This

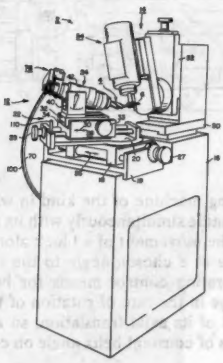
grinding action is especially valuable on ball end mills because the improved shape of the cutting edges provides more efficient cutting action, a longer life, and a better chip flow away from the cutting edges of the cutter.



3,680,263
METHOD AND APPARATUS FOR GRINDING END CUTTING TOOLS

Alford H. Johnson, Pittsford, N.Y., assignor to S. E. Huffman Corporation, Rochester, N.Y.

Filed June 3, 1970, Ser. No. 42,979
Int. Cl. B24b *3/06, 1/00*
U.S. Cl. 51—96 23 Claims



A method and apparatus for mechanically grinding the end cutting teeth in a tool (such as a ball nose end mill) having spiral flutes and end cutting teeth that join with axial fluting. Rotary movement of an end cutting tool about a vertical axis is mechanically transmitted into corresponding rotary movement of the tool about its own axis to uniformly and precisely generate a helical grind from a starting point on the nose of the tool to a blend with a helical axial flute. When doing work on a ball nose end mill, the present invention produces a gash with a desired rake, for example, a positive rake, and by tilting the grinding wheel the same machine is then used for grinding both the primary and secondary relief of the end cutting teeth.

3,680,264
KNIFE SHARPENING TOOL

Edward J. Dewitt, 1311 Forest Glen Dr., Winnetka, Ill.

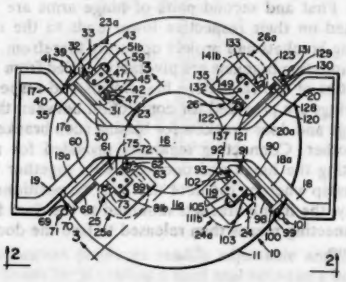
Filed Feb. 22, 1971, Ser. No. 117,540
Int. Cl. B24b *3/54*
U.S. Cl. 51—109 BS 7 Claims

A power driven tool for sharpening knives and similar cutting blades which is characterized by a driving motor arranged with its output shaft disposed vertically and carrying on its upper end a disc on the top face of which there is mounted a circular grinding plate or sheet, the motor being mounted on a supporting base member which in turn is mounted with a flexible connection on a suction cup for anchoring the tool on a supporting surface while permitting a limited amount of tilting from a normal upright position and having a degree of flexibility which insures return to the upright position when the tilting force is removed.

3,680,265
LAPPING MACHINE

William J. McClure, Kearneysville, W. Va., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,695
Int. Cl. B24b *37/02*
U.S. Cl. 51—131 8 Claims



A lapping machine in which the horizontal rotating circular disk providing a lapping surface is maintained in a substantially flat or planar condition without the use of truing plates or rings normally used for such purpose. A combined workpiece holder and pressure plate is attached to the lower end of each of a plurality of rotatably driven spindles which are horizontally adjustably positioned along radial lines extending between the axis or centerline of rotation of the lapping surface and the outer periphery of such surface. The plurality of spindles and their respective workpiece holders and pressure plates are positioned along their respective radial lines so that the paths of rotation of workpieces disposed between the lapping surface and the lower surfaces of the combined hol-

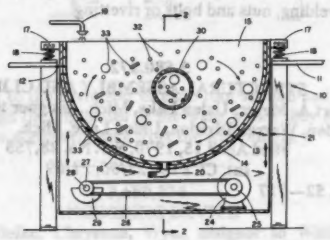
ders and pressure plates extend about the axis of rotation of the lapping surface in different but somewhat radially overlapping circular paths. Each spindle is rotatably driven by a respectively associated variable speed motor so that the speed of rotation of each respective holder and pressure plate and the workpieces therebelow can be adjusted to compensate for the different rotational speeds of said circular paths extending about the axis of rotation of the lapping surface.

3,680,266

APPARATUS AND METHOD FOR BURNISHING METAL OBJECTS

George J. Shiplov, Villa Park, Ill., assignor to Twin-Orb Corporation

Filed Feb. 16, 1971, Ser. No. 115,615
Int. Cl. B24b *31/00*
U.S. Cl. 51—163 **18 Claims**



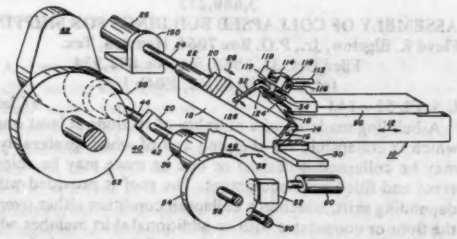
A vibratory burnishing machine includes a drum which is supported on a table for vibratory movement. A frame on the drum includes a rotating counterweight which during rotation imparts vibratory movement to the drum. The vibratory movement is imparted to burnishing media in the form of steel balls or shot which burnish metal articles within the drum. The machine is particularly adapted for polishing small articles of flat and circular configuration such as coins by the combination of an open end cylinder which is freely moveable in the drum in response to movement of the burnishing media.

3,680,267

WORKPIECE LOADING AND UNLOADING METHOD AND APPARATUS

Peter C. Vale; Anthony Palazzola, both of Detroit; Nicolae Grui, Berkley, and Raymond F. Nixon, Bloomfield Hills, all of Mich., assignors to Carmet Company, Pittsburgh, Pa.

Filed Feb. 18, 1971, Ser. No. 116,366
Int. Cl. B24b *47/02*
U.S. Cl. 51—215 H **14 Claims**



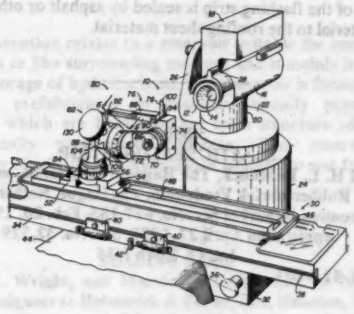
Method and apparatus for successively moving a plurality of workpieces into position where they can be clamped in place on workpiece processing apparatus and thereafter removed and automatically ejected. The workpieces are preferably fed from a magazine, and preferably one or two at a time, into a V-shaped notch formed in the end of a reciprocable chuck. The chuck is provided with passageways which terminate at the notch and are evacuated such that the workpiece will be held in place by suction. Additionally, a rotatable finger may be employed to help hold the workpiece on the chuck. After the chuck is loaded, it is moved forwardly to a position where it is in alignment with the center line of clamping members on the processing apparatus; the workpiece is clamped; the suction terminated while the finger is rotated out of engagement with the workpiece; and the chuck is retracted. In order to remove the workpiece from the processing apparatus, much the same cycle is repeated, except that the workpiece is ejected from the chuck as it is retracted.

3,680,268

WORKPIECE VISE SUPPORT ATTACHMENT FOR SURFACE GRINDING MACHINE

Calvin J. Lorton, 1319 Grand Ave., Dayton, Ohio

Filed April 2, 1970, Ser. No. 25,106
Int. Cl. B24b *3/00*
U.S. Cl. 51—218 A **2 Claims**



A tool grinder is provided with a workpiece support attachment having a pair of relatively slidable plates which are pre-adjustably positioned by rotation about an axis. The plates are connected by a lead screw adapted to be rotated by a hand wheel for relatively sliding them.

After the grinding of one surface of a workpiece by the grinding wheel, a second surface is ground by sliding one of the plates in a direction away from the grinding wheel and parallel to the second surface. At the same time, the workpiece is oscillated relative to the grinding wheel to grind the second surface flat.

3,680,269

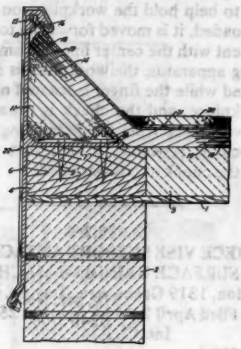
ROOF WITH GRAVEL STOP

Harry F. Fischer, Jr., Pittsburgh, and John N. Lang, Sewickley, both of Pa., assignors to All-State Industries, Inc.

Filed Aug. 13, 1970, Ser. No. 63,464
Int. Cl. E04b *7/02*
U.S. Cl. 52—94 **5 Claims**

A fascia plate extends along an edge of a substantially horizontal roofing support and is provided along its inner side with a central flange seated on and fastened to the support. The plate has a slot near its top extending lengthwise thereof and opening downwardly over the flange. A cant is mounted on the flange with its upper edge spaced below the slot. The support and the inclined face of the cant are covered by roofing sheet material. Disposed in the slot in the fascia plate is a

flexible impervious flashing strip that extends downwardly over the sheet material on the cant. At least the lower edge



portion of the flashing strip is sealed by asphalt or other adhesive material to the roofing sheet material.

3,680,270

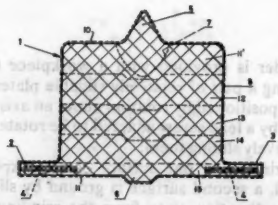
ELASTIC SEALING STRIP

Eduard H. L. DeMunck, The Hague, Netherlands, assignor to N.V. Rubberfabriek Vredestein, The Hague, Netherlands

Continuation-in-part of Ser. No. 617,185, Feb. 20, 1967. This application April 27, 1970, Ser. No. 32,329

Int. Cl. E04b *1/36*

U.S. Cl. 52—403 **3 Claims**



A sealing strip of elastic material for tunnel and building joints and including a projecting portion compressible into the main body of the strip. The projecting portion is of a different modulus of elasticity from that of said main body.

3,680,271

WALL FRAME STRUCTURES

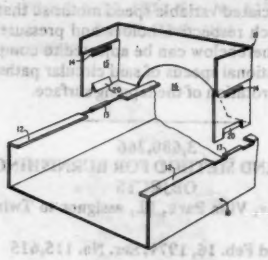
Eric William Satchell, Chatswood, New South Wales, Australia, assignor to Guest Keen & Nettlefolds (Aust) Limited, Auburn, New South Wales, Australia

Filed March 11, 1970, Ser. No. 18,556

Int. Cl. E04c *2/38*; F16b *5/07*

U.S. Cl. 52—656 **7 Claims**

A wall frame structure made up of upper and lower sheet steel plates between which extend a number of studs, the studs being connected to the plates, preferably at both ends by means which engage with co-operating means on the plate in



such a manner that the two are secured together without the use of welding, nuts and bolts or rivetting.

3,680,272

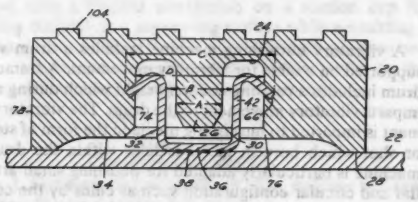
STRUCTURAL ASSEMBLY AND CLIP

Engelbert A. Meyer, Union Lake, Mich., assignor to USM Corporation, Warren Division, Union Lake, Mich.

Filed April 15, 1970, Ser. No. 28,755

Int. Cl. F16b *21/06, 21/09*

U.S. Cl. 52—717 **6 Claims**



A structural assembly is disclosed wherein a resilient clip, having a base portion secured to a support without perforation thereof, has integral resilient arms having outwardly and downwardly extending flanges which bite into the walls of a recess in a structural member telescoped over the clip, and with a central boss in the recess telescoped into an upwardly opening pocket defined by the arms and preventing lateral movement of the structural member which would dislodge the bite of the flanges in the walls of the recess.

3,680,273

ASSEMBLY OF COLLAPSED BUILDINGS FOR SHIPPING

Floyd E. Bigelow, Jr., P.O. Box 7064, Houston, Tex.

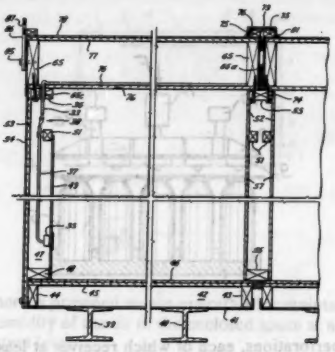
Filed Oct. 31, 1969, Ser. No. 872,934

Int. Cl. B65d *85/00*; E04h *1/12*

U.S. Cl. 52—143 **9 Claims**

A building made up of a plurality of sections at least one of which is collapsible for shipping and of which preferably all may be collapsed if desired or one or more may be shipped erect and filled with equipment. The roof is provided with a depending skirt, which in a collapsed condition either overlies the floor or cooperates with an additional skirt member which extends between the floor and the roof skirt to exclude water from the shipping package. When the building is erected, the roof skirt extends down over the joint between the roof and walls to form a seal there between. The skirt is of thin material which pulls into an out-of-the-way position over the interior walls which interior walls support the roof. Electrical outlets are provided in the walls with pigtails, which are exposed at

the upper end of the walls through an access panel. A breaker box is provided in the ceiling and the wires run from the



breaker box to the perimeter of each roof section and thence down through the top plates of the walls where they are connected to the pigtails running from the wall outlets.

3,680,274

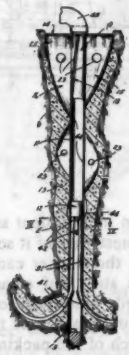
ANCHORING DEVICE

Robert F. Delke, Cheyenne, Wyo., assignor to William H. Chamberlain and Anna B. Chamberlain, Cheyenne, Wyo., part interest to each

Continuation-in-part of Ser. No. 758,554, Sept. 9, 1968. This application June 25, 1970, Ser. No. 49,727

Int. Cl. E02d 5/80

U.S. Cl. 52—157 **10 Claims**



A compression and tension load carrying ground or earth anchor having an elongated tubular pile member with tapered helical vanes therearound, a head plate at its upper end thereof, a cup slidable therein, tentacles depending from the cup, and tentacle bending orifices formed in the side wall. The vanes act as screw threads or plow shares when the pile member is driven in the ground, the head plate compacts the underlying earth and seals off any leakage path formed by the pile member or vanes, and the cup is forced downwardly in the pile member to extrude the tentacles through the bending orifices to form anchoring roots at one or more levels. The tentacles have barbed pointed ends fitting flush in the bending orifices. The tentacles may be tubular with orifices downstream from their pointed ends, orifices may be formed in the pile member and through the vanes and concrete may be pumped through the pile member and tentacles to flow through the orifices and form a bed of concrete around the anchor.

3,680,275

UNDERWATER STORAGE TANKS

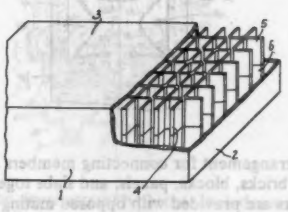
Jean Romiet, La Celle Saint-Cloud, and Armand Cimadevilla, Neuilly Chauts de Seine, both of France, assignors to Societe Anonyme Des Entreprises Leon Ballot, Paris, France

Filed Dec. 29, 1969, Ser. No. 888,656

Claims priority, application France, Dec. 30, 1968, 181997

Int. Cl. E04c 1/40; E04h 7/20

U.S. Cl. 52—227 **1 Claim**



This invention relates to a reservoir suitable for immersion in the sea or like surrounding medium and is mainly intended for the storage of hydrocarbons. The reservoir is formed from elements prefabricated in two-dimensionally prestressed concrete which are held together by a structure of three-dimensionally prestressed concrete. The reservoir is preferably of cellular structure and is adapted to rest freely on the sea floor.

3,680,276

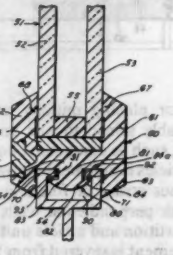
SEALING STRIP

Gerald T. Wright, and Marvin G. Smith, both of Houston, Tex., assignors to Helmerick & Payne, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 759,314, Sept. 12, 1968, abandoned. This application May 7, 1970, Ser. No.

Int. Cl. E06b 3/62; E04b 1/36

U.S. Cl. 52—398 **11 Claims**



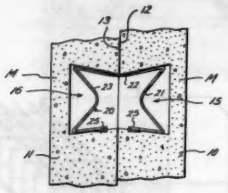
An elongated elastomeric sealing member having a cross-section comprising generally parallel portions connected by a web portion and forming a channel therebetween. An elongated tongue portion projects from the web portion into the channel. The cross-section of the tongue portion comprises a head portion connected to the web portion by a shank portion. The head portion has oppositely directed lateral lips normally not engaging another member to which the sealing member is to be connected but adapted to engage the other member on a force being applied to said sealing member preventing both lateral movement and pull out of said sealing member relative to the other member.

3,680,277

ARRANGEMENT FOR CONNECTING CONCRETE OR CLAY BRICKS, BLOCKS, PANELS, AND SLABS

Charles H. Martin, Lafayette, La., assignor to J. Brooke Hamilton, Lafayette, La., a part interest

Filed July 16, 1970, Ser. No. 55,363
Int. Cl. E04c 1/10
U.S. Cl. 52—438 **3 Claims**



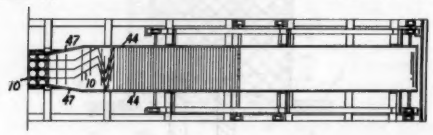
An arrangement for connecting members such as concrete or clay bricks, blocks, panels, and slabs together wherein the members are provided with opposed mating dovetail grooves when the members are positioned in end to end relationship. A hollow key member, the longitudinally extending surfaces of which are generally concave, is resilient or flexible and may be partially collapsed to fit within the mating dovetail grooves of the members to be interlocked together. The resiliency of the key member tends to expand it and thereby aid in retaining it in position as well as locking the members together.

3,680,278

METHOD OF PLACING PARTITIONS BETWEEN GROUPED ARTICLES

Reinhold A. Pearson, Spokane, Wash., assignor to R. A. Pearson Company, Spokane, Wash.

Division of Ser. No. 745,821, July 18, 1968, Pat. No. 3,541,759. This application July 27, 1970, Ser. No. 58,421
Int. Cl. B65b 35/30
U.S. Cl. 53—26 **4 Claims**



A method for placing initially collapsed partition units which are foldably joined to one another between grouped rows of articles, such as containers, bottles or cans. A continuous group of articles is collected in rows on a moving conveyor and a continuous string of foldably joined partitions is expanded and their perpendicular walls are placed between the articles. The partition and article unit corresponding to a carton load requirement is severed from the continuous structure prior to actual filling of a carton.

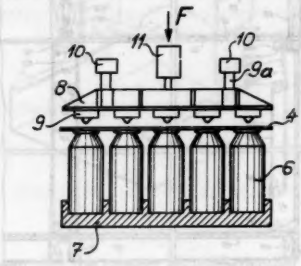
3,680,279

METHOD FOR RETAINING OBJECTS IN A CONTAINER

Patrice Picq, Beaurepaire, France, assignor to Aluminium Suisse SA

Filed Sept. 19, 1969, Ser. No. 859,493
Claims priority, application Switzerland, Sept. 20, 1968, 14204/68
Int. Cl. B65b 35/00, 61/22
U.S. Cl. 53—26 **4 Claims**

A method for maintaining several objects or vessels in a packing, wherein the said objects are maintained in spaced apart relationship by means of a plate of cardboard or other material forced onto the said objects and having regularly spaced perforations, each of which receives at least a part of an object, the said plate being located parallel to the plane containing the bases of the packed objects.

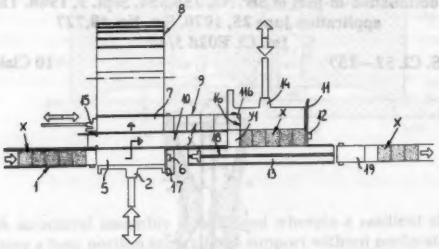


3,680,280

CIGARETTE PACKAGING APPARATUS

Franco Stancari, Bologna, Italy, assignor to AMF Incorporated

Filed April 27, 1970, Ser. No. 31,962
Claims priority, application Italy, May 9, 1969, 7017 A/69
Int. Cl. B65b 57/10
U.S. Cl. 53—59 **8 Claims**



In this disclosure, an independent stacker is coupled to a packing machine just upstream of it so that each time a parcelling machine stops, the stacker can continue to run normally to deliver pack stacks of cigarettes that are in the storage unit associated with it to eliminate the need of stripping the stacking unit each time the parcelling machine stops. Additionally, each of the packing machines is coupled to intercept the pack stacks and transfer them in its own plurality of boxes during those instances when the parcelling machine stops and to recirculate said stacks when the parcelling machine again starts normal operation.

3,680,281

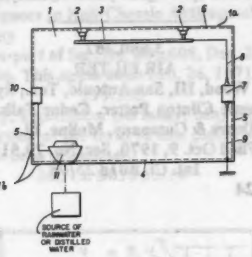
ARRANGEMENT FOR ELECTROSTATIC ENVIRONMENTAL CONDITIONING

Herbert Jahnke, Unterthingau, and Constantin Graf von Berckheim, Weinheim, both of Germany, assignors to Constantin Graf von Berckheim, Weinheim, Germany

Filed April 10, 1969, Ser. No. 815,163
Claims priority, application Germany, April 11, 1968, P 17 78 257.9
Int. Cl. B03c 3/01
U.S. Cl. 55—106 **9 Claims**

Wall means defines an enclosed air-conditioning space and is connected to ground potential. At least one electrode is carried by the wall means electrically insulated therefrom and is

connected to a positive potential so that an electrostatic field is established between the electrode and the wall means.

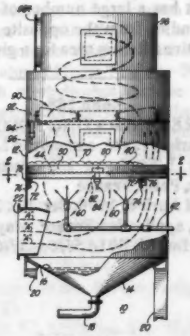


Further there is provided means operative for maintaining the relative humidity of the air in the enclosed space at a substantially constant level.

3,680,282
GAS SCRUBBER

Roger E. Kent, Mt. Prospect, Ill., assignor to National Dust Collector Corporation, Skokie, Ill.

Continuation-in-part of Ser. No. 809,231, March 21, 1969, abandoned. This application May 28, 1970, Ser. No. 41,247
Int. Cl. B01d *47/04*
U.S. Cl. 55—233 **11 Claims**



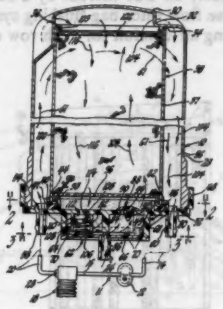
A wet-type gas scrubber comprising a housing having an inlet for contaminated gas and an outlet for cleansed gas spaced above said inlet, means for wetting said gas with scrubbing liquid, first means between said inlet and outlet for accelerating said wetted gas to high velocity and forming a bed or layer of liquid foam bubbles across said housing between said inlet and outlet. Second means is provided for varying the thickness of said foam layer across said housing, thereby obtaining a substantially uniform gas velocity through the foam layer throughout the flow cross section of the foam bed.

3,680,283
AIR DRYER ASSEMBLY FOR VEHICLE LEVELING SYSTEM

David L. Jones, Jr., Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 21, 1970, Ser. No. 73,929
Int. Cl. B01d *53/14*
U.S. Cl. 55—309 **3 Claims**

An air dryer assembly having an open ended dessicant cartridge located centrally of an outer cylinder forms a bypass chamber around the cartridge. The cylinder includes an inlet and an outlet to the chamber adapted to be connected between an air spring for a vehicle and its pressure source for air flow through the bypass chamber when the vehicle is level. During a pump-up phase an inlet valve is operable to draw outside air through the cartridge to dry the outside air for use

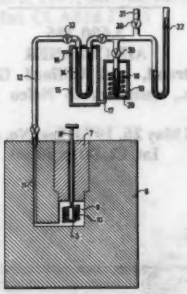


in the system. The dryer assembly further includes an exhaust valve operable to discharge excessive air from the air spring to counterflow through the dessicant cartridge for removing moisture therefrom during a regenerative phase that occurs each time that the vehicle is unloaded.

3,680,284
APPARATUS FOR PRODUCING GASEOUS FISSION PRODUCTS, PARTICULARLY XE–133

Per Erik Schmeling, Nykoping, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed April 14, 1969, Ser. No. 815,919
Int. Cl. G21g *1/00*
U.S. Cl. 55—208 **1 Claim**



Gaseous fission products are produced by bombarding a suitable element with neutrons. The element is enclosed in a gas-tight container during the neutron bombardment. When the desired quantity of the gaseous fission product has been produced, the container is opened and the gaseous phase in the container is brought to flow to an apparatus in which the desired fission product is separated.

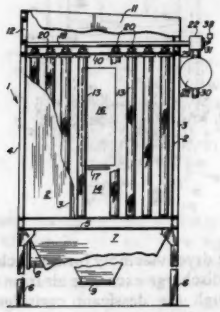
3,680,285
MODULAR BAG-TYPE FILTER FOR GASES

Wayne G. Wellan; John O. Converse, and Arden E. Swanson, all of Minneapolis, Minn., assignors to Hart-Carter Company, Minneapolis, Minn.

Filed Nov. 23, 1970, Ser. No. 91,816
Int. Cl. B01d *46/04*
U.S. Cl. 55—302 **16 Claims**

A dust filter module having a hollow housing in which a plurality of tubular filter bags are arranged in several parallel

rows and suspended from a tube sheet separating a dusty air section from a clean air section of the housing interior, the filter bags hanging into the dusty air section with their upper ends opening into the clean air section through respective apertures in the tube sheet, each filter bag having a rigid collar at its open end adapted to be removably attached to the tube sheet from the dusty air side thereof by a bayonet-type connection. A reverse flow filter bag flushing system is provided in which a flushing air conduit for each row of filter bags extends into the clean air section directly above and parallel with the respective row of filter bags and has a series of individual spouts each directed into a flow nozzle extending into the open end of a respective filter bag. The several conduits have their outer ends extending into a common valve chest which has direct connection with a reservoir of compressed air and which includes individual pilot-controlled pressure-actuated diaphragms each contoured to engage and normally close the outer end of a respective flushing air conduit, and means is provided for operating said diaphragms sequentially.

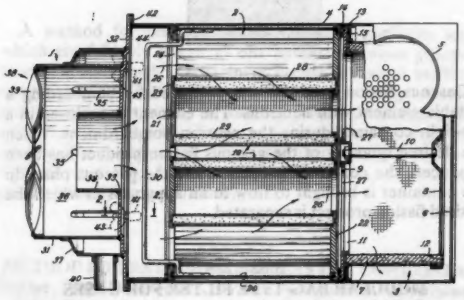


3,680,286

AIR CLEANER

William G. Nostrand, and Clifford G. Nelson, both of Stoughton, Wis., assignors to Nefco Filter Corporation, Stoughton, Wis.

Filed May 26, 1970, Ser. No. 40,672
Int. Cl. B01d *50/00*
U.S. Cl. 55—484 4 Claims



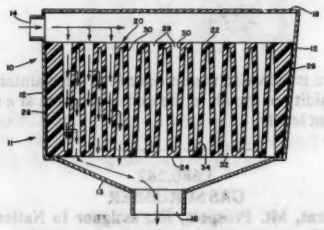
For removing dust from air, a safety filter comprising a working filter unit subassembly and safety filter element are housed within a preferably rectangular shell and combined with a centrifugal precleaner. The working filter unit comprises a plurality of spaced cylindrical filter elements permanently mounted in plastic end plates. Flow is from outside to the inside of the cylindrical elements. Mounting of the precleaner automatically clamps the working filter unit in position and seals the passageway to the safety filter element.

3,680,287

AIR FILTER

Charles Drury Wood, III, San Antonio, Tex.; Sydney Alvin Olsen, and Jimmie Clinton Potter, Cedar Falls, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Oct. 9, 1970, Ser. No. 79,513
Int. Cl. B01d *25/08*
U.S. Cl. 55—524 7 Claims



An air filter includes a hollow container with an air inlet, an air outlet, and a filter element in the container between the inlet and outlet. The filter element is made of a mass of polystyrene beads fused into a rigid block, the air passing through the interstices between the beads, which are electrostatically charged and collect the contaminants from the air. The filter element has a large number of overlapping finger-like passages extending from the opposite sides of the filter to increase the effective filtering area for a given filter size.

3,680,288

PROCESS FOR REGENERATING ADSORPTION MASSES

Robert Eluard, Paris, France, assignor to L'Air Liquide Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed April 6, 1970, Ser. No. 25,743
Claims priority, application France, May 7, 1969, 6914638
Int. Cl. B01d *51/06, 53/00*
U.S. Cl. 55—58 3 Claims

A process for regenerating an adsorbent mass contained in an adsorption column and used for the isothermic separation of at least two gaseous constituents by a succession of adsorption and desorption operations, in which the regeneration of the mass is effected by desorption of at least one of the most adsorbable gaseous constituents, this desorption being effected by a fall in pressure and elution under constant pressure, and an elution with simultaneous raising of the pressure without withdrawal of the eluant gas precedes the said elution under constant pressure and succeeds the said fall in pressure.

3,680,289

PROCESS OF SEPARATING TETRAFLUOROETHYLENE FROM GAS MIXTURES CONTAINING THE SAME

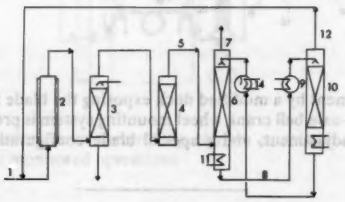
Werner Rudolph, and Joachim Massonne, both of Hannover, Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

Continuation-in-part of Ser. No. 886,608, Dec. 2, 1969, Pat. No. 3,581,466. This application Feb. 26, 1971, Ser. No. 119,305

Claims priority, application Germany, May 29, 1970, P 20 26 188.5The portion of the term of this patent subsequent to June 1, 1989, has been disclaimed.

Int. Cl. B01d *53/14*

U.S. Cl. 55—48 6 Claims



Process for separating tetrafluoroethylene from gas mixtures containing in addition to tetrafluoroethylene, perfluorohydrocarbons and/or hydrogen containing fluorohydrocarbons with one to four carbon atoms, excepting from gas mixtures obtained in the pyrolysis of difluoromonochloromethane which comprises passing the gas mixtures at a temperature of from +60° to −30° C. in countercurrent contact with methylisobutylketone in a separatory zone, collecting the tetrafluoroethylene at the top of said zone and the methylisobutylketone containing said perfluorohydrocarbons and/or hydrogen containing fluorohydrocarbons at the bottom of said zone.

3,680,290

CROP CONDITIONER WITH BAFFLE OF FLUFFER MEANS

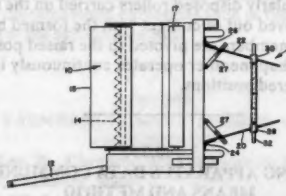
Jules L. Laverne, Gray-la-Ville, France, assignor to Deere & Company, Moline, Ill.

Filed Oct. 12, 1970, Ser. No. 79,961

Claims priority, application Germany, March 9, 1970, P 20 11 013.8

Int. Cl. A01d *57/26*

U.S. Cl. 56—1 10 Claims



A crop conditioner with a swath or windrow fluffer freely suspended to yield to crop force and is further made up of a plurality of separate baffle members selectively adjustable and laterally interconnectable.

3,680,291

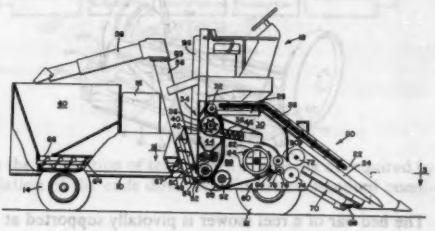
CORN HARVESTING MACHINE

Gust Soteropulos, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Nov. 10, 1969, Ser. No. 875,453

Int. Cl. A01d *45/02*

U.S. Cl. 56—14.3 17 Claims



A total corn plant harvesting machine adapted to separately and concurrently process the grain and stover. In operation, the ears are picked from the stalks, the husks are removed, and the kernels are separated from the cob; the stalks are severed from the ground and fed into a chopping mechanism along with the husks and cobs. The chopped stover can be deposited on the ground or stored in an adjacent container, while the grain can be cracked and mixed with the chopped stover or stored in a separate adjacent container.

3,680,292

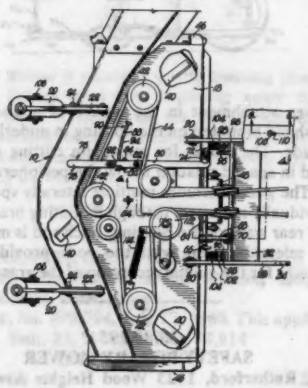
MOWER IMPLEMENT FOR GARDEN TRACTOR

James E. McCanse, Oregon, Ill., assignor to Hesston Corporation, Hesston, Kans.

Filed June 3, 1971, Ser. No. 149,556

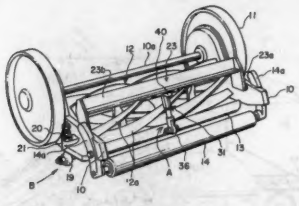
Int. Cl. A01d *35/26*

U.S. Cl. 56—15.8 10 Claims



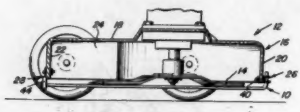
A tractor implement employs a torque rod having an angularly offset projection, a swingable, adjusting lever provided with a tube slidably receiving the projection, and a crank pin on the rod engageable with and supported by a hitch assembly interconnecting the implement with the tractor for translating the swinging motion of the lever into an upward or downward movement of one end of the implement.

3,680,293
REEL MOWER BLADE ADJUSTMENT
Dale A. Klemenhagen, Minneapolis, Minn., assignor to Toro Manufacturing Corporation, Minneapolis, Minn.
Filed Aug. 11, 1969, Ser. No. 849,035
Int. Cl. A01d 55/20
U.S. Cl. 56—249 19 Claims



The bed bar of a reel mower is pivotally supported at each end by a self-aligning rod end type bearing. Said bearings and the bed bar are adjustable vertically with respect to the reel to bring the reel and bed knife into parallel relationship. A screw adjustment device connects the center of the bed bar with the mower frame. Rotation of the screw adjustment device tilts the bed bar and the bed knife carried thereon with respect to the reel to provide the desired shearing relationship therebetween. A detent locks the screw and permits accurate incremental adjustment thereof.

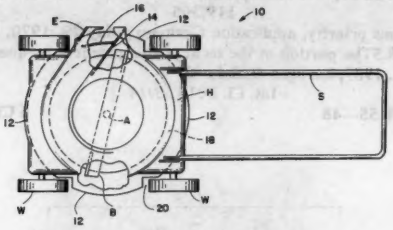
3,680,294
MOWER ATTACHMENT
Herbert R. Dacus, 1089 Madrid, Rockledge, Fla., and Harry V. Christner, 795 Newfound Harbour Drive, Merritt Island, Fla.
Continuation-in-part of Ser. No. 127,280, March 23, 1971. This application Nov. 4, 1971, Ser. No. 195,577
Int. Cl. A01d 55/18
U.S. Cl. 56—255 8 Claims



A mower attachment in the nature of a blade-enclosing guard or shield mounted on the housing in underlying relation to the blade. The blade, for maximum cutting efficiency, is positioned in spaced relation below the peripheral wall of the housing. The guard includes multiple laterally spaced parallel rods individually mounted, through mounting brackets, on the front and rear walls of the housing. Each rod is maintained by a single releasable clip with the rods providing multiple straight paths for the guided reception of the grass.

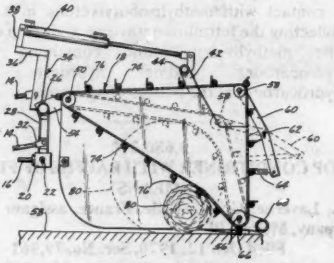
3,680,295
SAFETY ROTARY MOWER
Harry T. Rutherford, 1123 Wood Heights Ave., Baltimore, Md.
Filed Aug. 20, 1971, Ser. No. 173,469
Int. Cl. A01d 35/26
U.S. Cl. 56—320.2 14 Claims

A rotary lawn mower having a ring-shaped blade shroud in the form of a flat plate affixed at the bottom of the deck below the blade concentric with the axis of rotation, with the inner diameter being less than the blade length and the outer diameter extending beyond the housing; a diagonal plate at the exit chute extends inward and forward above the blade; in various embodiments the shroud has diametrically opposite notches in the inner periphery shielded by fore-and-aft skids, a portion of the front of the shroud and deck are removable as a unit for



replacement by a modified deck exposing the blade in front, a through-axle bell crank wheel mounting system is provided for height adjustment, and a special blade configuration is disclosed.

3,680,296
HAY BALING MACHINE
Howard E. Beebout, Route 1, Columbia, Iowa
Filed Sept. 18, 1970, Ser. No. 73,475
Int. Cl. A01d 75/00
U.S. Cl. 56—16.4 8 Claims

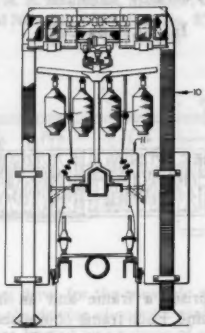


A machine for forming round bales of hay including a frame detachably connected to a three point hitch on a tractor and rearwardly extending arms are pivoted between an operational lower position to a raised upper position by a hydraulic cylinder such that a continuous flexible pickup chain extending over triangularly disposed rollers carried on the side members will be moved out of contact with the formed bale of hay when the side members are pivoted to the raised position. The continuous pickup member operates continuously in both the raised and lowered positions.

3,680,297
YARN PIECING APPARATUS DATA COMMUNICATING MEANS AND METHOD
Charles D. Lee, Jr., Charlotte, N.C., assignor to Parks-Cramer Company, Fitchburg, Mass.
Filed Aug. 10, 1970, Ser. No. 62,362
Int. Cl. D01h 15/00
U.S. Cl. 57—34 R 10 Claims

Data is originated from a textile yarn piecing apparatus movable along a textile yarn forming machine for locating and

piecing up ends down thereon by monitoring operations of the yarn piecing apparatus, signaling certain states of the monitored operations and transmitting signals correlated to the states of the monitored operations.



3,680,298

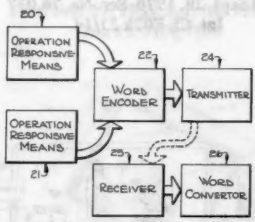
TEXTILE MACHINE DATA COMMUNICATING APPARATUS AND METHOD

David W. Saunders, Fitchburg, Mass., assignor to Parks-Cramer Company, Charlotte, N.C.

Filed Aug. 10, 1970, Ser. No. 62,363

Int. Cl. D01h *13/26, 13/32*

U.S. Cl. 57—34 R **24 Claims**



Data originating from a traveling unit moving along a textile machine having spindle locations at which ends of yarn normally are formed is substantially continuously transmitted and processed. This is accomplished by the encoding of binary word signals, transmittal of such signals from the traveling unit, reception of such signals remotely from the traveling unit and processing of the received signals to decipher therefrom the states of certain sensed operations such as the formation of ends of yarn at the spindle locations.

3,680,299

TEXTILE YARN PRODUCTION CONTROL APPARATUS AND METHOD

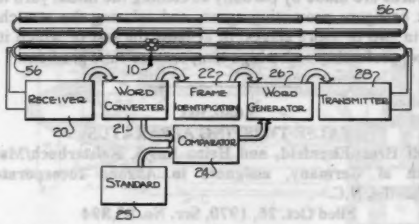
Charles D. Lee, Jr., Charlotte, N.C., assignor to Parks-Cramer Company, Fitchburg, Mass.

Filed Aug. 10, 1970, Ser. No. 62,370

Int. Cl. D01h *15/00*

U.S. Cl. 57—34 R **20 Claims**

The rates of production of textile yarn by textile yarn forming machines are optimized in accordance with a method and through the use of an apparatus wherein ends of yarn normally being formed by one or more of such machines are monitored by a traveling unit transversing the machines, data concerning the ends down condition of a traversed machine is collected and compared with a desired standard condition, and variation in the production of textile yarn is effected as required by the relation of the ends down condition and standard condition.



3,680,300

PROCESS AND APPARATUS FOR FIBER BAND SPINNING

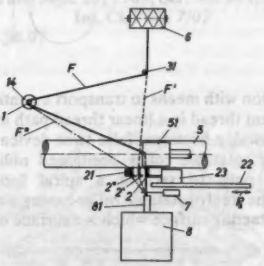
Hans Landwehrkamp, Ingolstadt, Germany, assignor to Schubert & Salzer, Ingolstadt, Germany

Filed Nov. 30, 1970, Ser. No. 93,552

Claims priority, application Germany, Dec. 3, 1969, P 19 60 562.0

Int. Cl. D01h *15/00, 1/12*

U.S. Cl. 57—34 R **13 Claims**



The broken thread is returned to the spinning chamber by releasing the thread from the displacing guide means in response to a break while forcing the thread sidewise out of the nip of the doffing rollers. The thread reserve is thus free to be drawn back into the spinning chamber under the suction force created by the chamber.

3,680,301

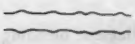
TEXTURED POLYETHYLENE TEREPHTHALATE YARNS

Buzano Michel, Villeurbanne Rhone, France, assignor to Societe Rhodiaceta, Paris, France

Division of Ser. No. 799,794, Feb. 17, 1969. This application Sept. 23, 1970, Ser. No. 74,914

Int. Cl. D02g *3/00*

U.S. Cl. 57—140 J **2 Claims**



Textile articles comprise continuous filament yarns (or staple fibers obtained therefrom) of polyethylene terephthalate or another thermoplastic material, in which the individual filaments are of alternately decreasing and increasing thickness,

the thinnest zones having the highest crystallinity index and molecular orientation and vice versa, but all the zones having a certain index of crystallinity, each filament having a non-spiral three dimensional crimp and a high apparent volume. The yarns are made by partially stretching the initial yarn in a crack or figure promoting agent, and relaxing the stretched yarn in two or more stages, in at least the last of which it is heated, preferably with a high temperature-time gradient.

3,680,302

FALSE TWISTING APPARATUS

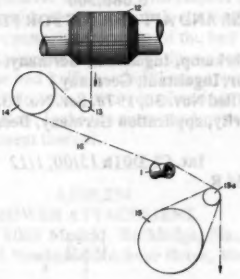
Rudolf Hess, Elsenfeld, and Heinz Engel, Kelsterbach/Main, both of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Oct. 26, 1970, Ser. No. 83,894

Claims priority, application Germany, Oct. 29, 1969, G 69 41 966.5

Int. Cl. D02g *1/04*

U.S. Cl. 57—34 HS **10 Claims**



In combination with means to transport a continuous mono- or multi-filament thread in a linear thread path at a controlled rate of withdrawal, a frictional false twist device consisting of a single freely rotatable roller positioned obliquely to the linear thread path to receive a spiral loop of thread therearound, the freely rotatable roller having a concave arcuate thread contacting surface which is a surface of revolution.

3,680,303

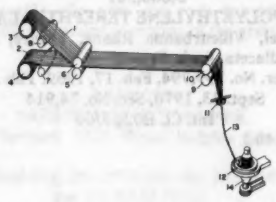
BLENDING CONTINUOUS FILAMENT YARNS

Charles W. Kim, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 9, 1970, Ser. No. 44,841

Int. Cl. D02g *3/02, 3/38*

U.S. Cl. 57—157 R **12 Claims**



Intimate filament-to-filament blending of continuous filaments is accomplished by laying up at least two fibrillated striated films and converting the laid up structure to a coherent yarn end by twisting or by entanglement. The method can be used to blend, e.g., yarns of different color, different denier or different shrinkage potential.

3,680,304

LINK STRAP

Reinhold Heckel, Strietweg 15, Pforzheim Fed., Germany

Filed May 15, 1970, Ser. No. 37,799

Claims priority, application Germany, June 4, 1969, P 19 28 536.0

Int. Cl. F16g *15/12*

U.S. Cl. 59—80 **12 Claims**

Each link comprises a frame and an insert detachably mounted in said frame. Each frame comprises first and second hinge portions at opposite ends thereof. The second hinge portions are formed with pockets. Each insert is formed adjacent to the second hinge portion of the frame of the same link with end noses received by the pockets of the frame of the same link. Each insert is formed adjacent to the first hinge portion of the frame of the same link with extensions. Hinge pins are provided, each of which extends through the extensions of the insert of one of said links and in said first hinge portion of the frame of the same link and in said second hinge portion of the frame of an adjacent link.

3,680,305

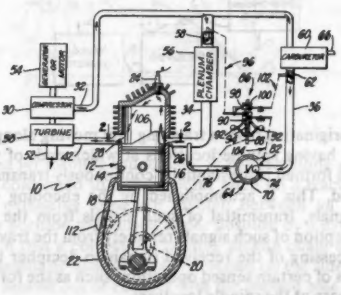
CLEAN COMBUSTION ENGINE SYSTEM

Raymond S. Miller, 840 E. Foothill Blvd., #109, Azusa, Calif.

Filed Sept. 28, 1970, Ser. No. 76,037

Int. Cl. F02k *23/14*

U.S. Cl. 60—13 **6 Claims**



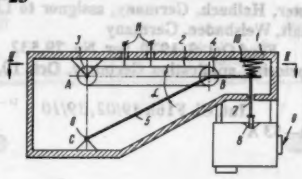
A clean combustion engine system having a two cycle engine vehicle is supplied near the end of each power stroke with an initial charge of pure air for purifying and cooling the engine cylinder and a following fuel-air charge which enters the cylinder in a manner that achieves efficient combustion during the next power stroke. Air is supplied to the engine through a large plenum chamber from a compressor powered by the engine. Fuel flow to the engine is regulated by a carburetor throttle valve and a timing valve which opens and closes in timed relation to the reciprocating motion of the engine piston. Air flow to the engine is regulated by an air valve operated by a governor in response to both throttle valve setting and engine speed.

3,680,306

RECIPROCATING DRIVES FOR THE MOVABLE MEMBERS OF SHUT-OFF ELEMENTS

Jury Filippovich Nikitin; Nikolai Trofimovich Romanenko, both of Moscow, and Mikhail Trofimovich Romanenko, Brovary, all of U.S.S.R., assignors to Vysshee Tekhnicheskoe Uchilische Im. N. E. Baumana, Moscow, U.S.S.R.

Filed Nov. 10, 1969, Ser. No. 875,116
Int. Cl. F01k 7/06
U.S. Cl. 60—23 5 Claims



A reciprocating drive for the movable member of shut-off element wherein the driving element 2 made in the form of at least one wire turn heated by a source of electric current and resting on two supports 3, 4 one of which (3) is secured in the body 1 while the second one (4), connected with the movable member, moves when the driving element 2 is elongated due to heating. The second support 4 is fastened to one end of the spring-loaded part 5 whose other end is secured in the body 1. Such an installation of the second support makes it possible to increase several times the travel of the movable member as compared to the elongation of the driving element due to heating.

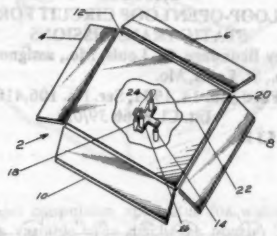
Shown in FIG. 1 is the reciprocating drive for the movable member of shut-off element, realized in accordance with the present invention.

3,680,307

HEAT ENERGY TRANSFER DEVICE

Lester W. Michalec, 1110 N.W. 74th Terrace, Hollywood, Fla.

Filed Feb. 17, 1969, Ser. No. 799,831
Int. Cl. F03g 7/04
U.S. Cl. 60—26 8 Claims



A heat energy transfer device including tanks, shielding means, and a drive means. The tanks contain fluid that is highly responsive to temperature variations over a practical temperature range in order to provide vapor pressure to move the fluid to operate the drive means. Each tank is connected to the drive means. Shielding means are connected to each tank in order to provide energy source guidance functions by controlling the movement of the piston engines in relation to the energy source.

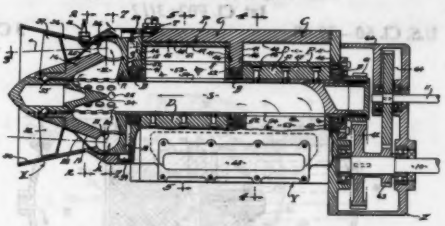
3,680,308

INTERNAL COMBUSTION TURBINE ENGINE

Ward A. St. John, 58 Farland Drive, Newbury Park, Calif.

Filed June 29, 1970, Ser. No. 50,572
Int. Cl. F02c 3/14
U.S. Cl. 60—39.34 23 Claims

A turbine engine comprised of a driving wheel characterized by a circumferential series of combustion nozzles canted on helically disposed axes thereby to apply torque to said wheel and to discharge burning gases axially; and also comprised of a positive displacement rotary compressor drawing a fuel-air mixture and delivering it under pressure through a tubular drive shaft for centrifugal charging of the combustion nozzle plenums; there being stator and rotor turbine blading utilizing the resulting kinetic energy in the axial and expansive flow of gases also to apply torque to said wheel. Included are unique air starting means and geared drive for use of the engine as a shaft driving prime mover.

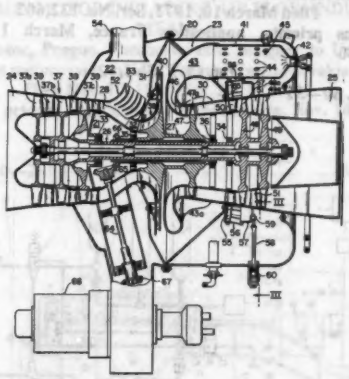


3,680,309

TWO-SPOOL AUXILIARY POWER UNIT AND CONTROL MEANS

Frank Blakeslee Wallace, Jr., Phoenix, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Sept. 25, 1969, Ser. No. 861,097
Int. Cl. F02c 7/02
U.S. Cl. 60—39.07 15 Claims

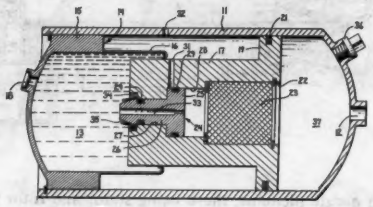


A gas turbine engine with dual, telescoped, independently acting rotor constructions having a multistage, axial, low-pressure compressor impeller on one rotor and a single-stage, centrifugal, high-pressure impeller on the other rotor. Casing provides separated bleed air and combustion air chambers, the former receiving air from one impeller and the latter receiving high-pressure air from the other. Control means are provided to cause one rotor to operate at constant speed and the other to operate at variable speeds necessary to meet predetermined pneumatic requirements with consequent maximum efficiency in all stages of operation whereby the lowest possible fuel consumption per mission will result.

3,680,310
STARTING DEVICE FOR MONOPROPELLANT GAS GENERATOR

Carl D. Arvidson, Flanders, N.J., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 19, 1967, Ser. No. 642,646
Int. Cl. F02c *3/12*
U.S. Cl. 60—39.48 3 Claims

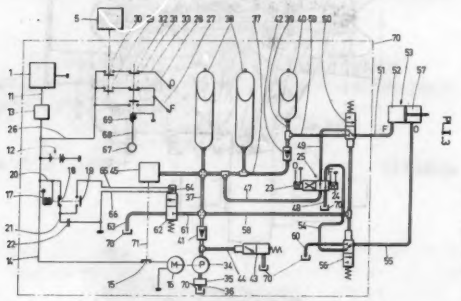


A starting device for a monopropellant gas generator of a boot-strap type having a metallic seal closing the monopropellant chamber comprising first and second concentrically mounted differential area piston with said first differential area piston being utilized to penetrate said metallic seal and initiate propellant flow and said second differential area piston being utilized to sustain pressure within said monopropellant chamber.

3,680,311
AUTONOMOUS DEVICE FOR THE STORAGE AND USE OF HYDRAULIC AND/OR PNEUMATIC POWER

Jacques Harbonn, Jouars Ponchartrain, and Jean-Pierre Aubert, Honfleur, both of France, assignors to Institute Francais Du Petrole Des Carburants Et Lubrifiants, Ruell-Malmaison Hauts-de-Seine, France

Filed March 10, 1971, Ser. No. 122,662
Claims priority, application France, March 12, 1970, 7009000
Int. Cl. F15b *1/02*
U.S. Cl. 60—51 5 Claims

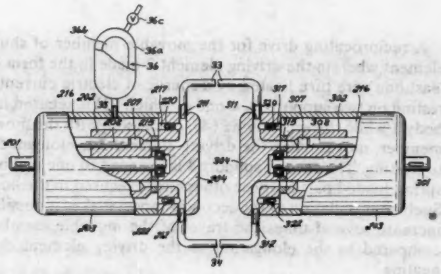


Autonomous device for the storage and use of pressurized fluid comprising one main fluid accumulator connected to a source of pressurized fluid, at least one double-acting jack the two chambers of which are connected to said main accumulator through separate pipes and through a remotely controllable main distributor adapted to connect one or the other of said separate pipes to the main accumulator, a safety accumulator of pressurized fluid connected to a first of said chambers through a safety distributor allowing, in working condition, the communication of said first chamber with the main accumulator and, in emergency condition, the communication of said first chamber with the safety accumulator while discontinuing the communication of any chamber with the main distributor, and means for detecting any failure of the device, adapted to switch the device to the emergency condition in case of failure.

3,680,312
HYDROSTATIC MACHINE

Franz Forster, Haibach, Germany, assignor to Linde Aktiengesellschaft, Weisbaden, Germany

Filed Oct. 9, 1970, Ser. No. 79,532
Claims priority, application Germany, Oct. 10, 1969, P 19 51 234.6
Int. Cl. F16h *39/02, 39/10*
U.S. Cl. 60—53 A 9 Claims

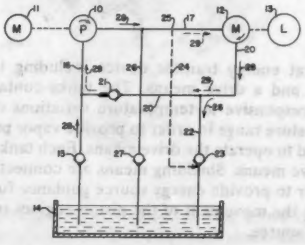


A hydrostatic machine, e.g. a hydrostatic pump or hydrostatic motor operating in a closed fluid circuit and having a housing into which leakage of the hydraulic medium can occur, is provided with check valves communicating between the housing and the main ports to enable leakage fluid to pass directly into the main hydraulic circuit.

3,680,313
CLOSED LOOP-OPEN LOOP CIRCUIT FOR HYDROSTATIC TRANSMISSIONS

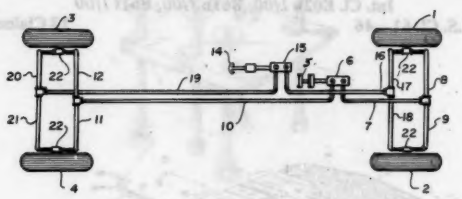
Robert Wesley Brundage, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 14, 1971, Ser. No. 106,410
Int. Cl. F16h *39/02*
U.S. Cl. 60—53 R 9 Claims



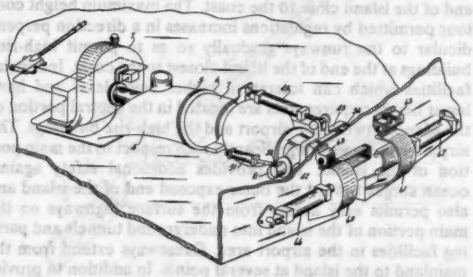
A hydro-static transmission circuit including a positive displacement hydraulic pump and motor in combination which operates in open loop fashion when the circuit is operating in its normal or pump driving state. When it is desired to slow down the motor and it becomes overrunning, a pilot operated check valve closes blocking the normal discharge of the motor to the reservoir and creating a closed loop system to absorb energy from the system.

3,680,314
HYDRAULIC EMERGENCY BRAKE SYSTEM
Francis J. Toomey, 1888 Kearns Ave., Pittsburgh, Pa.
Filed Nov. 19, 1969, Ser. No. 870,372
Int. Cl. F15b 7/00
U.S. Cl. 60—54.5 E 2 Claims



An automotive vehicle, hydraulic emergency brake system comprising two parallel systems, one operated by the foot pedal brake and the other, by the emergency brake. To each wheel cylinder is connected a Tee valve having one arm connected to each system and which Tee valve is pressure-responsive so as to automatically close off whichever system has developed a leak, whereby the other system can still operate all four wheel brakes.

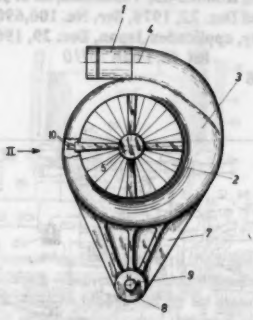
3,680,315
HYDRAULIC JET PROPULSION APPARATUS
George R. Aschauer, and Paul E. Ritenour, both of Racine, Wis., assignors to Twin Disc, Incorporated, Racine, Wis.
Filed Oct. 12, 1970, Ser. No. 79,733
Int. Cl. F02k 1/20
U.S. Cl. 60—221 15 Claims



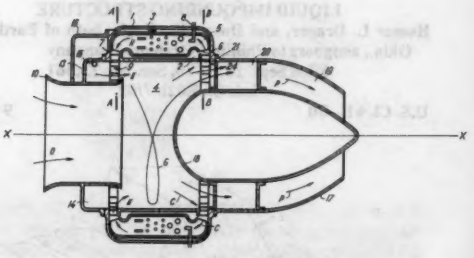
Hydraulic jet propulsion apparatus for water borne craft and having a variable area discharge nozzle. The nozzle is reversed under power by having a laterally movable reversing portion which can be easily moved in a transverse direction to thereby vary the reverse thrust with good control. The apparatus also includes an improved bearing for the main drive shaft by means of which shrouds or outer sleeves have been eliminated from the water intake thereby increasing the inflow with less turbulence.

3,680,316
FLAT LIFTING FAN UNIT
Horst Pakendorf, Ritterhude, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung, Bremen, Germany
Filed Aug. 27, 1970, Ser. No. 67,535
Claims priority, application Germany, Sept. 20, 1969, P 19 47 730.6
Int. Cl. F02k 3/04, 11/00
U.S. Cl. 60—269 3 Claims

A lifting fan unit for use in VTOL aircraft and composed of a lifting fan, a blade tip turbine connected to the blades of the fan and a gas turbine connected to produce a gas stream which drives the blade tip turbine, all of these elements being mounted in a single housing which supports the gas turbine so that its axis of rotation is approximately perpendicular to the axis of rotation of the fan and is approximately tangential to the periphery of the portion of the housing which houses the fan, the interior of the housing being configured for directing the gas stream produced by the gas turbine against the buckets of the blade tip turbine and the exterior of the housing including a portion for mounting the housing on a support structure.



3,680,317
REACTION MOTOR INCLUDING AIR FLOW INDUCING MEANS
Stefan Kotoc, Prague, Czechoslovakia, assignor to Ustav pro vyzkum motorovych vozidel, Prague, Czechoslovakia
Filed Nov. 10, 1969, Ser. No. 875,186
Claims priority, application Czechoslovakia, Nov. 14, 1968, 7755/68
Int. Cl. F02k 1/20
U.S. Cl. 60—269 8 Claims



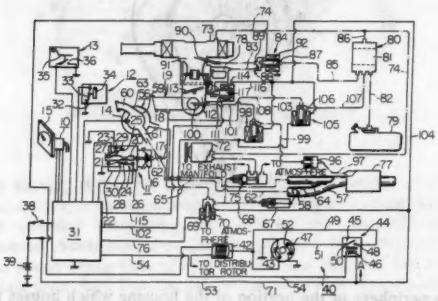
A gas generator for engines in which a fuel is combusted to provide an effluent fed to a cylindrical chamber wherein it is caused to flow in a spiral path creating a vacuum along its longitudinal axis sucking air through the cylinder and expelling it out an oppositely spaced opening. A portion of the expelled air being recycled into the combusted fuel.

3,680,318

CENTRALIZED AIR-POLLUTION PREVENTIVE SYSTEM

Yasuo Nakajima, No. 16, 1-chome, Futaba, Yokosuka; Yoshimasa Hayashi, Kudencho Danchi 4-201 No. 740, Kuden-cho, Tutsuka-ku, Yokohama; Toru Yoshimura, Nissan-Urago-Ryo No. 3-68, Oppamahigaski-cho, Yokosuka; Kunihiko Sugihara, Nissan-Nishitera-Ryo, No. 714 Nishiterao, Kanagawa-ku, and Shin-ichi Nagumo, No. 2502, Shinohara-cho, Kohoku-ku, Yokohama, all of Japan

Filed Dec. 22, 1970, Ser. No. 100,690
Claims priority, application Japan, Dec. 29, 1969, 45/859
Int. Cl. F02b *75/10*
U.S. Cl. 60—278 19 Claims



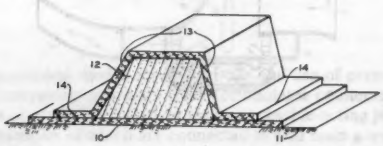
A centralized control system for coordinating a plurality of vehicular air-pollution preventive devices in such a manner as to minimize the harmful contents of the automotive exhaust gases. In a preferred embodiment, the system includes six air-pollution preventive devices; an ignition timing retarding device, an exhaust gas after-burning device, a fuel vapor trapping device, an exhaust gas recirculating device, an atmospheric air introducing device and a device for reducing hydrocarbon exhaust during deceleration. The system also includes five sensors; a vehicle speed sensor, an intake manifold vacuum sensor, a throttle opening sensor, an engine temperature sensor and an exhaust temperature sensor, and a controller adapted to determine the individual predetermined conditions of engine operation during which the air-pollution preventive devices are placed in operation, in accordance with electric signals supplied thereto from these sensors. The controller, upon determination of such conditions, operates to keep the devices operative.

3,680,319

LIQUID IMPOUNDING STRUCTURE

Homer L. Draper, and Duane W. Gagle, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Sept. 18, 1970, Ser. No. 73,361
Int. Cl. E02b *7/02*
U.S. Cl. 61—30 9 Claims



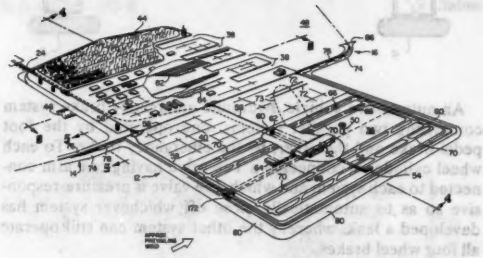
A liquid impounding structure is constructed comprising a compacted particulate wall completely enclosed by a protective incasement of a nonwoven fabric coated with asphaltic material.

3,680,320

OFF-SHORE TRANSPORTATION, INDUSTRIAL AND URBAN COMPLEX

George O. Goodboy, Jr., Altadena; Donald W. Green, Woodland Hills, and Conrad J. Kopec, Los Angeles, all of Calif., assignors to Macro Synetic Systems, Inc., Canoga Park, Calif.

Filed Dec. 11, 1970, Ser. No. 97,060
Int. Cl. E02b *1/00;* B61b *1/00;* B61f *1/00*
U.S. Cl. 61—46 13 Claims



A man-made island is located just off the coast to provide international airport and shipping facilities. The airport is located on the outer extreme of the island with runways paralleling the coast and extending in the direction of the prevailing winds. The sound contours drop off from the airport zone at the outer end of the island to a relatively low level at the inner end of the island close to the coast. The maximum height contour permitted by regulations increases in a direction perpendicular to the runways gradually so as to permit high-rise buildings at the end of the island closest to the coast. Industrial facilities which can tolerate a higher noise level and have lesser height requirements are located in the central portion of the island between the airport and the high-rise buildings. The airport area is raised significantly with respect to the main portion of the island. This provides additional safety against ocean surges toward the outer exposed end of the island and also permits easy access from the surface highways on the main portion of the island into underground tunnels and parking facilities in the airport area. Causeways extend from the mainland to the island at several points. In addition to providing highway and rapid transit access, the causeways may shield harbor and other facilities on the inner portion of the island from rough seas. The retaining caissons terminate below water level, and beaches are provided at the interface between the island and the water, and between the causeways and the water. These beaches provide recreation areas and a measure of safety for emergency landings and the like.

3,680,321

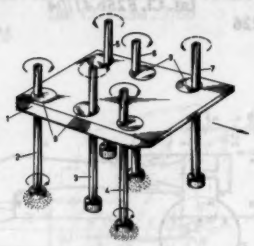
MOBILE OFFSHORE PLATFORM

Cornelis Bordes, Vlaardingen, Netherlands, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands

Filed Dec. 3, 1970, Ser. No. 94,732
Claims priority, application Netherlands, Dec. 4, 1969, 18255/69
Int. Cl. E02b *17/00;* E02f *9/04;* B65b *21/50*
U.S. Cl. 61—46.5 6 Claims

A mobile offshore platform has at least five columns mounted eccentrically in rotatable frames on the platform. Each column has a foot at its lower end in which the column is rotatably disposed. The platform can walk on the sea floor by

lowering three feet, raising the remaining feet, rotating the frames of the lowered feet whereupon the platform advances



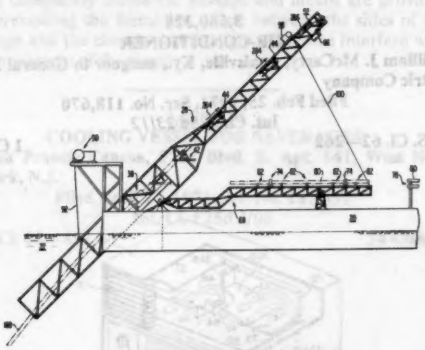
with an arcuate movement while the column rotates in its emplaced foot, then lowering the raised feet, and so on.

3,680,322

PIPELINE LAYING SYSTEM UTILIZING AN INCLINED RAMP

Clyde E. Nolan, Jr.; William A. Morgan, and William R. Rochelle, all of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed April 15, 1970, Ser. No. 28,732
Int. Cl. F16l *1/00*; B63b *35/04*
U.S. Cl. 61—72.3 **26 Claims**



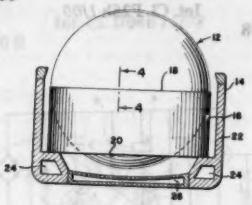
Method and apparatus for laying pipelines wherein an elongated ramp means is mounted on a vessel for selective pivotal movement. The ramp means supports the pipeline so as to produce a desired penetration angle of the pipeline into the body of water and is provided with a fixed clamp means for maintaining the pipeline substantially stationary with respect to the vessel during operations performed in connection with adding new pipeline sections, and with a movable clamp means for tensioning the pipeline during payout of the pipeline. An elongate pipe section loader means is also pivotally mounted on the barge for movement between a substantially horizontal position and controllable pivotal positions aligned with the inclined ramp means. In its horizontal position, the loader means receives a new section of pipe after which the loader means is pivoted upwardly toward the inclined ramp means. Thereafter, the pipe is transferred to the ramp means for continuation of the laying operation while the loader is returned to its horizontal position to receive a new pipe section.

3,680,323

TANKER FOR LIQUIFIED AND/OR COMPRESSED GAS

Ragnar Bognaes, Jeloy, and Olav Solberg, Oslo, both of Norway, assignors to Kvaerner Brug AS, Oslo, Norway

Filed Oct. 15, 1970, Ser. No. 81,101
Claims priority, application Norway, Oct. 18, 1969, 4145/69
Int. Cl. F17c *13/08*
U.S. Cl. 62—55 **25 Claims**



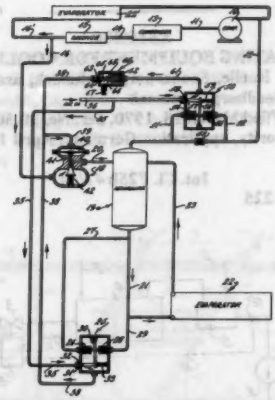
In a marine vessel having a hull structure for transporting or storing a cargo tank adapted to contain liquified and/or compressed gas, the tank is supported by an annular skirt having opposed edges integrally secured respectively to the hull structure and to a peripheral portion of the tank; the skirt minimizes the stresses transferred between the tank and the hull structure and is adapted to accommodate changes in the dimensional characteristics of the tank, due to temperature changes therein, independently of the hull structure.

3,680,324

VAPORATOR REFRIGERANT FEED MODULATED FROM A VARIABLE LOAD

Milton W. Garland, Waynesboro, Pa., assignor to Frick Company, Waynesboro, Pa.

Filed Dec. 7, 1970, Ser. No. 95,594
Int. Cl. F25b *5/00*, *41/04*
U.S. Cl. 62—117 **6 Claims**

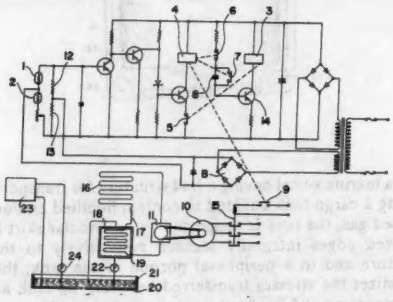


A gravity circulation flooded evaporator has a first control which is responsive to the pressure of the liquid head in the supply line to the evaporator and a second control in the suction line to the compressor which is responsive to the vapor flow rate, the two controls being interconnected in such manner that the second is operative to override the first in order to modulate or stop the flow of refrigerant to the evaporator at a lower pressure head than that which is normally used during periods when the load on the evaporator is below a predetermined minimum, in order to avoid an undesirable accumulation of liquid refrigerant in the evaporator during periods of low load.

3,680,325
ON-OFF CONTROLLED OIL TEMPERATURE ADJUSTING APPARATUS WITH A PROTECTIVE DEVICE

Junji Chigira, Maebashi, Japan, assignor to Kanto Seiki Kabushiki Kaisha, Maebashi City, Gunma Pref., Japan

Filed Dec. 4, 1970, Ser. No. 95,020
Claims priority, application Japan, Dec. 16, 1969, 44/119808
Int. Cl. F25b *1/00*
U.S. Cl. 62—158 2 Claims

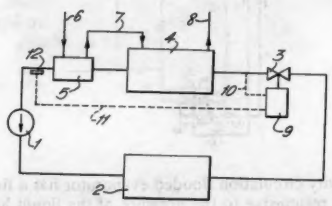


An on-off controlled oil temperature adjusting apparatus with a protective device comprising a bridge circuit consisting of a heat sensitive portion positioned in oil and a standard heat sensitive portion having one terminal connected to a direct current source and the other terminal connected to a first relay. A second relay with a break contact is inserted in the circuit of said first relay, a series circuit consisting of the break contact of said first relay and a capacitor, a make contact of said first relay connected in parallel with said capacitor, and a make contact of said first relay inserted in a main relay circuit for breaking the power source to the motor for driving a compressor. Said series circuit is inserted in the base circuit of a transistor of the circuit of said second relay.

3,680,326
REFRIGERATING EQUIPMENT FOR COOLING A FLUID

Zbigniew R. Huelle, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed March 18, 1970, Ser. No. 20,502
Claims priority, application Germany, April 16, 1969, P 19 19 231.5
Int. Cl. F25b *41/04*
U.S. Cl. 62—225 3 Claims

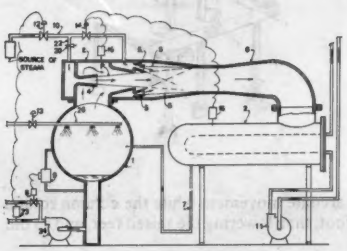


The invention relates to refrigerating apparatus for cooling a fluid which may be either a liquid or a gas. The components include, in addition to the conventional compressor, condenser and evaporator, a pilot evaporator unit on the downstream side of the evaporator. The fluid to be cooled is passed through the drier prior to being passed through the evaporator. This has the main effect of increasing the effective capacity of the main evaporator by facilitating an optimum regulating operation.

3,680,327
STEAM JET REFRIGERATION APPARATUS

Robert Stein, Rego Park, N.Y., assignor to Albert C. Nolte, Jr., New York, N.Y., a part interest

Filed Sept. 8, 1970, Ser. No. 70,044
Int. Cl. F25b *41/04*
U.S. Cl. 62—226 13 Claims

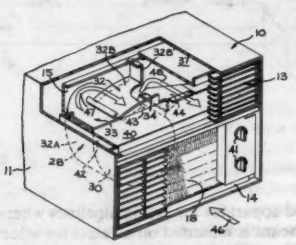


A steam jet refrigeration apparatus provided with a compound ejector for high pressure steam and which can be adapted to be utilized also with low pressure steam systems. The use of a compound ejector and a superheater lowers the rate of steam consumption of existing steam jet refrigeration systems, thereby making the apparatus economical in operation. The apparatus can also be provided with an improved automatic control, which approaches the quality of a modulating control.

3,680,328
AIR-CONDITIONER

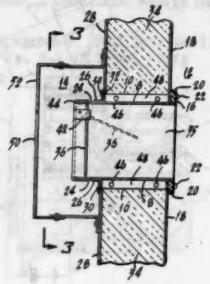
William J. McCarty, Louisville, Ky., assignor to General Electric Company

Filed Feb. 25, 1971, Ser. No. 118,670
Int. Cl. F25d *23/12*
U.S. Cl. 62—262 1 Claim



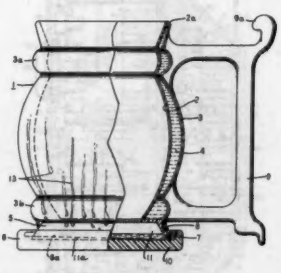
This invention provides an improved air-conditioner. Basically, the air-conditioner comprises casing means mountable within an opening into a room, air-conditioning means contained within the casing, and blower means contained within the casing for drawing air from the room into the casing and proximate to the air-conditioning means for conditioning thereby and then discharging the conditioned air to the room. However, in particular accordance with the present invention, the blower means that is contained within the air-conditioner has an impeller rotatably journalled between two spaced apart blower housing walls and is provided with scroll means that can perform a dual function of bridging the two housing walls and also providing a plurality of air discharge ports from the blower housing.

3,680,329
PRESSURE EQUALIZING VALVE
Winfield R. Burtis, Trenton, N.J., assignor to Emhart Corporation, Bloomfield, Conn.
Filed Feb. 18, 1971, Ser. No. 116,510
Int. Cl. F25d *23/06*
U.S. Cl. 62—275 6 Claims



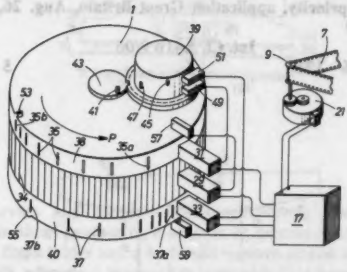
Refrigerated equipment is provided with an air passage through a wall thereof. A closure member within the passage is movable in opposite directions in response to overpressure or under pressure created within the refrigerated space upon opening or closing of a door. The closure member substantially completely closes the passage and means are provided for preventing the formation of ice between the sides of the passage and the closure which might otherwise interfere with the movement of the closure.

3,680,330
COOLING VESSEL FOR BEVERAGES
Joseph Francis Canosa, 5701 Blvd. E. Apt. 141, West New York, N.J.
Filed April 27, 1971, Ser. No. 137,857
Int. Cl. F25d *3/08*
U.S. Cl. 62—457 14 Claims



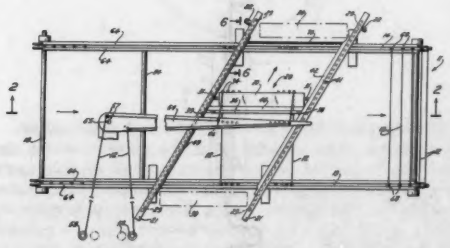
The double-walled vessel includes a sealed chamber for a refrigerant which at least partially encloses the beverage compartment. The base of the vessel is surrounded by an annular channel slightly inclined toward the handle, for catching condensation drippings and directing them into a storage chamber beneath the drinking compartment.

3,680,331
SYNCHRONIZED PROGRAM CONTROL APPARATUS FOR A KNITTING MACHINE
Franz Morat, Freiburg, Germany, assignor to Franz Morat GmbH, Stuttgart-Vaihingen, Germany
Filed Jan. 21, 1970, Ser. No. 4,605
Claims priority, application Germany, Jan. 23, 1969, P 19 03 299.6
Int. Cl. D04b *15/78*
U.S. Cl. 66—50 R 19 Claims



In order to obtain exact synchronism between the movement of a record carrier tape and the needle operations of a circular knitting machine, the record carrier is stepwise transported by a stepping motor which is controlled by synchronizing pulses generated by an impulse generator which is controlled by the needles of the knitting cylinder, or by other synchronizing elements of a rotary part of a knitting machine, which are spaced exactly the same distances from each other. Preferably, accelerating and decelerating elements are provided on the needle cylinder, and control an impulse generator so that the speed of the record carrier is gradually increased to a desired speed and then gradually reduced to a standstill when the knitting operations are to be controlled by a standard program.

3,680,332
APPARATUS FOR FEEDING FILLING THREADS TO A WARP KNITTING MACHINE
Rudolph G. Bassist, Lancaster, Pa., assignor to Travis Mills
Filed July 22, 1970, Ser. No. 57,235
Int. Cl. D04b *23/12*
U.S. Cl. 66—84 17 Claims



First and second spaced apart conveyors, each of which may be an endless chain, carry a plurality of thread clamping means. A guide means moves between the two conveyors, and guides filling threads drawn from relatively stationary supplies. A plurality of first conveyor clamping means are operated simultaneously as the guide means crosses them, to clamp the filling thread ends. Filling threads are drawn from the first conveyor to the second as the guide means moves, and a plurality of second conveyor clamping means are

operated simultaneously as the guide means crosses them, to clamp the filling threads. Thereafter, the filling threads are cut between the second conveyor and the guide means. The conveyors then move the filling threads to the knitting instrumentalities of the knitting machine.

3,680,333

KNITTING METHOD AND KNITTED GARMENT

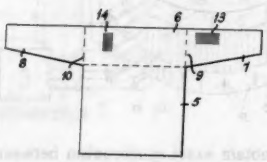
Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtaulds Limited, London, England

Filed Aug. 17, 1970, Ser. No. 64,590

Claims priority, application Great Britain, Aug. 26, 1969, 42,488/69

Int. Cl. A41b *9/06*

U.S. Cl. 66—176 **5 Claims**



A knitted sleeved garment comprises front and rear upper body portions constituted by two pieces of flat fabric having side edges joined, on the knitting machine, with the ends of sleeves knitted on the machine. A method of machine knitting such a garment is also described.

3,680,334

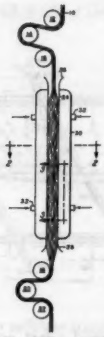
APPARATUS HAVING CHAMBER OF OVAL CROSS-SECTION FOR HEAT TREATING LARGEDENIER TOW

Wayne K. Erickson, and David R. Buchanan, both of Greenville, S.C., assignors to Phillips Petroleum Company

Filed Jan. 20, 1971, Ser. No. 108,060

Int. Cl. D06c *1/06*

U.S. Cl. 68—5 D **10 Claims**



Fibers of propylene polymers and the like are passed rapidly through an elongated oval chamber by means of a pair of tensioning means wherein they are subjected to saturated steam to give a soil resistant resilient product.

3,680,335

SAFETY DEVICE CONTROLLING VEHICLE LOCKING

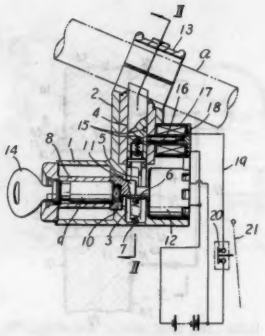
Takekazu Onishi, Nagoya, Japan, assignor to Kabushiki-Kaisha Tokai Rika Denki Seisakusho, Aichi-ken, Japan

Filed March 23, 1971, Ser. No. 127,274

Claims priority, application Japan, April 3, 1970, 45/32762

Int. Cl. B60r *25/02*; E05b *63/18, 47/06*

U.S. Cl. 70—252 **4 Claims**



An improvement in theft preventing devices having a rotor of lock of the cylinder type by means of which the ignition switch is settable to various positions and a locking bolt which is protrusible by the rotation of rotor to the locking position to block a vital part of vehicle such as a steering shaft, in which said improvement lies in that said locking bolt is not protrusible unless an electromagnetically operable means acting on the locking bolt to keep said bolt to its retracted position is actuated, whereby the accidental locking of the vital part of vehicle during the driving of the vehicle is positively prevented.

3,680,336

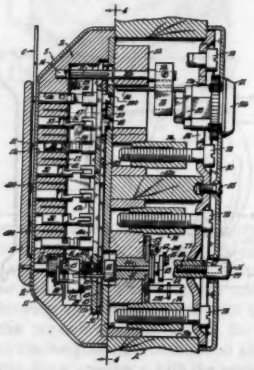
MECHANICAL CODE ACTUATED SENSOR UNIT AND LOCK EMBODYING SAME

Herbert M. Schendel, 13161 Crestline Drive, Santa Ana, Calif.

Filed March 15, 1971, Ser. No. 123,995

Int. Cl. E05b *47/00, 35/00*

U.S. Cl. 70—276 **46 Claims**



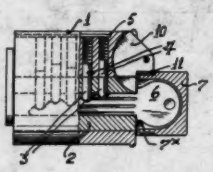
A mechanical, code actuated sensor unit having one or more sensing slides which are movable from retracted to extended positions to actuate an output member of the unit, and tumblers which normally block extension of the slides and are positioned axially to permit slide extension in response to

preselected code pattern information introduced into the sensor unit by means of a coded card adapted to be inserted into the unit or a keyboard adapted to be manually preset. The sensor unit may be programmed for actuation in response to any of a vast number of different code patterns. The sensor unit may be utilized for a wide variety of security applications and is disclosed in conjunction with a door lock and an electrical switch controlled by the unit.

3,680,337
SAFETY LOCK

Edwin G. Krakauer, 2 Turf Lane, Roslyn Heights, Long Island, N.Y.

Filed March 9, 1971, Ser. No. 122,320
Int. Cl. E05b *17/18*
U.S. Cl. 70—419 **2 Claims**

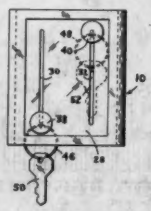


The lock casing employs a key-operated cylinder having tumbler-receiving passages in line with spring-engaged tumblers in the casing for the cylinder. When unlocking by a key, the latter moves the tumblers into inoperative position, as customary. To prevent "picking" of the lock, a key-receiving turn button is pivotally held on the casing, and when the turn button is moved into key-slot exposed position, said movement effects locking of the cylinder. It is only when the turn button abuts the key-opening of the cylinder that the latter can be turned by the key to unlock. Thus when the key-hole of the cylinder is exposed the cylinder is held inoperative.

3,680,338
MAGNETIC RECEPTACLE FOR KEYS AND THE LIKE

Charles Arthur Lee, 187 Seymour Ave., Newark, N.J.

Filed Oct. 18, 1971, Ser. No. 189,882
Int. Cl. E05b *17/18*
U.S. Cl. 70—456 **10 Claims**

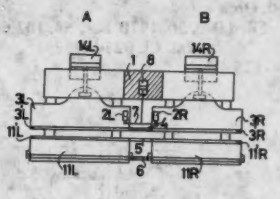


A receptacle for holding keys and the like includes a section of magnetically susceptible material formed in the walls of the receptacle. Keys are mounted to holding devices connected to magnets which move along predetermined paths associated with the magnetically susceptible material. Positioning means on the external surface of the receptacle connect to the magnets so that the keys can be raised or lowered from the receptacle without having to open the receptacle, by adjusting the positioning means on the outside of the case.

3,680,339
WORK START SYNCHRONIZER IN PLURAL PRESS BRAKES COUPLING OPERATION

Masahiro Hayakawa, Sakaide, Japan, assignor to Amada Co., Limited, Kanagawa, Japan

Filed June 22, 1970, Ser. No. 48,193
Claims priority, application Japan, June 25, 1969, 44/49679
Int. Cl. B21j *9/20*
U.S. Cl. 72—28 **10 Claims**

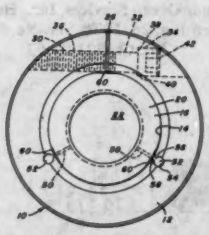


Apparatus and method for synchronizing plural press brakes in sheet processing machines or presses having movable and fixed tables and a hydraulic control circuit associated therewith, wherein a mechanism is provided for operating the movable tables while keeping the same in close alignment, including a pilot mechanism which descends with a predetermined lag behind the descent of the movable tables, a bleed-off valve for each table, provided in the hydraulic circuit, and a mechanism for adjusting the hydraulic pressure for driving the movable tables.

3,680,340
DIE ASSEMBLY

William H. Phillips, Jr., Northbergen, N.J., assignor to Carnet Company, Pittsburgh, Pa.

Filed May 1, 1970, Ser. No. 33,741
Int. Cl. B21c *3/00*; B21b *31/34*
U.S. Cl. 72—36 **12 Claims**



An improved die assembly having a split casing and adjustable means bridging said split casing to apply a compressive force to a die body contained within the bore of said casing wherein the inside surface of said casing bore is adapted with a plurality of symmetrically placed, radially extending slots extending a predetermined distance into said casing and terminating in longitudinal bores having a diameter larger than the width of said slots and wherein the center line of said bore is contained within the plane of said radial slot, and said die body is adapted with flats on its otherwise cylindrical outer surface, said flats being aligned longitudinally with the center line of said cylindrical die body such that the surface of said die body when compressively contained within said split casing does not contact the casing in the immediate vicinity of said longitudinal slots so that adverse stresses are not introduced into the casing or die body.

ERRATUM

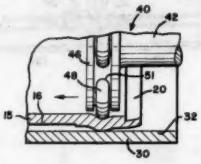
For Class 72—56 see:
Patent No. 3,680,397

3,680,341

METHOD AND APPARATUS FOR RECONDITIONING A DRUM OF A REPRODUCING MACHINE

George P. Finn, Jr., Cincinnati, Ohio, assignor to Flaturn Inc., Cincinnati, Ohio

Filed Dec. 30, 1970, Ser. No. 102,664
Int. Cl. B21d *3/02*
U.S. Cl. 72—125 15 Claims



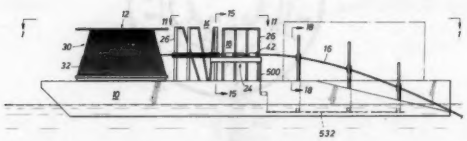
A drum of a reproducing machine, includes a cylindrical tube which has an outer surface of predetermined length and diameter and end portions with counterbores for receiving end support hubs. When the outer surface is damaged or is undersized, the tube is reconditioned by first tuning the center portion of the outer surface to a predetermined diameter and then expanding the tube both radially and axially within a rotating hollow arbor by feeding a plurality of circumferentially spaced rollers axially into the tube. The ends of the tubes are faced to remove the expanded counterbored end portions and to reduce the tube to the predetermined length. New counterbores are formed within the faced ends of the tube, and the outer surface of the tube is finished to the predetermined outer diameter.

3,680,342

APPARATUS FOR LAYING PIPELINES

James D. Mott, and Richard B. Feazle, both of Houston, Tex., assignors to Fluor Ocean Services, Inc., Houston, Tex.

Filed Jan. 26, 1970, Ser. No. 5,842
Int. Cl. B21d *3/02*
U.S. Cl. 72—161 39 Claims



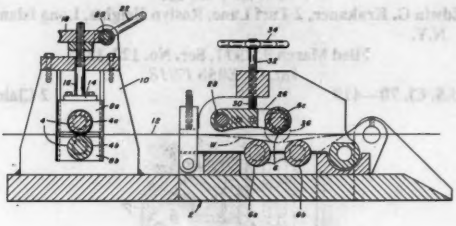
An apparatus for laying a pipeline from a barge-mounted reel including compound-bending means, tensioning means and vertical support means. Each means preferably has an endless chain composed of blocks linked together by connecting pins. The pins also support high-load carrying rollers. The rollers ride both on relatively stiff tracks and on relatively flexible tracks which are supported by hydraulically-controlled rods operable to cause the flexible tracks to assume a desired curvature for imparting to the pipe. In the tensioning means, two such moving chains are oppositely positioned to directly engage opposite sides of a generally rectilinear portion of said pipe, thereby exerting a series of longitudinally-spaced, continuously-effective tensioning forces in the pipe. The apparatus further includes hydraulically-operated stanchions for selectively and adjustably supporting said pipeline in a vertical plane to allow the pipe to enter a body of water at a desired vertical inclination.

3,680,343

APPARATUS FOR LEVELING THIN STRIP

Cecil W. Singleton, and Richard P. Jones, both of Leechburg, Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed March 5, 1970, Ser. No. 16,838
Int. Cl. B21b *15/00*; B21d *1/02*
U.S. Cl. 72—161 4 Claims



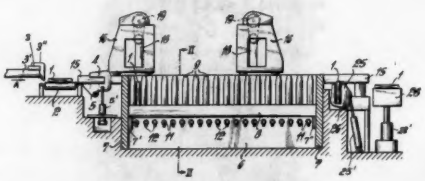
Apparatus for removing coil set, and dish, from thin gauge strip, such as electrical grade, hard temper steel, having a combination of rolls including a first pair of stacked rolls, one of which is substantially cylindrical in shape and the other of which is slightly concave so that passage of the material through the first pair of rolls will affect a slight elongation of the material at its edges. The apparatus contains a second group of rolls consisting of a cluster of staggered, or offset rolls of substantially cylindrical shape, whereby a workpiece passing therethrough is alternately flexed in opposite directions away from a straight pass line through the apparatus.

3,680,344

SYSTEM FOR COOLING LARGE, HOT METAL SLABS

Willie Manthey, Duisburg, and Heinz Schmitter, Rumeln-Kaldenhausen, both of Germany, assignors to BWG Bergwerk- und Walzwerk-Maschinenbau GmbH

Filed Jan. 11, 1971, Ser. No. 105,310
Claims priority, application Germany, Jan. 20, 1970, P 20 02 272.4
Int. Cl. B21b *43/10*, *45/02*
U.S. Cl. 72—201 10 Claims

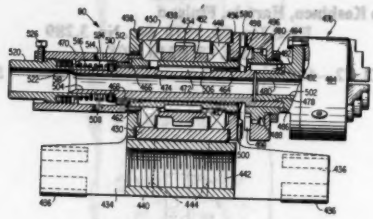


Metal slabs coming hot from a rolling mill, in a more or less horizontal position, are fed into a set of pivotal jaws which erect them for engagement by a hoist clamp carrying each slab across a pool of cooling water for upright insertion into and removal from an assigned bay of a submerged rack. A further set of jaws at the other end of the pool returns the cooled slabs to a recumbent position preparatorily to further handling.

3,680,345
FLOATING, BLANK FEED AND TURNING MECHANISM FOR THIN WALL PIPE MILL

Alexandr Ivanovich Tselikov; Vsevold Vladimirsovich Nosal, and Vadim Anatolievich Verderevsky, all of Moskow, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky and Proektnokonstruktorsky Institute Metallurgicheskogo Mashinostroeniya, Moscow, U.S.S.R.

Filed May 25, 1970, Ser. No. 40,132
Int. Cl. B21b *17/10*
U.S. Cl. 72—208 21 Claims

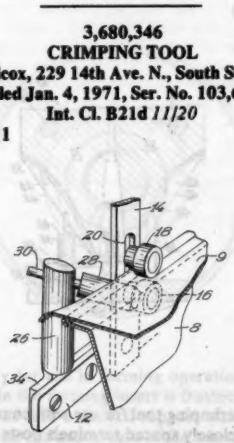


A pipe blank feeding and rotating mechanism including a floating chuck, a mandrel rod end clamp and associated feed and turning gear mechanism is disclosed as a part of a cold rolling, thin-walled pipe mill assembly. The blank chuck has a through passage surrounding and enabling relative axial travel of a pipe blank over a mandrel rod. The chuck head has a shank by which it is mounted in a spindle which in turn is rotatable in a chuck body. The chuck head (and its shank) are axially spring biased to permit an increment of axial shift (float) of the head against spring bias relative to the spindle and body as a reaction to axially moving a pipe blank into the pipe blank rolling area. Self containing locking components coacting between the chuck shank and the chuck spindle permit disabling of the floating aspect. The mandrel end clamp has quick release, positive locking jaws which non-rotatably secure the clamp to the end of a mandrel rod, yet the clamp and the mandrel rod can be rotated. The mill has gear mechanism connected to the mandrel rod end clamp and to both the chuck spindle and to the chuck body to provide correlated rotation of the blank chuck head and mandrel rod clamp, and also, via the chuck body, to provide an axial feeding movement to the blank chuck.

3,680,346
CRIMPING TOOL

Rudolph R. Wilcox, 229 14th Ave. N., South St. Paul, Minn.

Filed Jan. 4, 1971, Ser. No. 103,692
Int. Cl. B21d *11/20*
U.S. Cl. 72—211 8 Claims

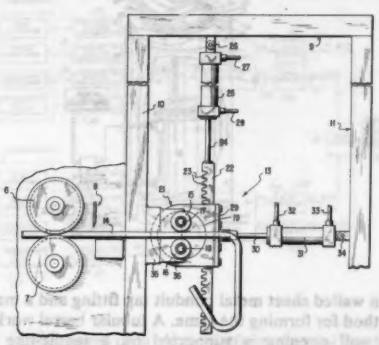


A hand tool for rolling over and crimping the edge of an aluminum foil cover about the edge of an aluminum foil container such as used in the food industry. A bending roller on the tool bends the edge of the cover into position between a pair of rollers which are slideably carried on the tool so that they can be initially separated to permit insertion of the edge of the container and the aluminum foil cover therebetween.

3,680,347
BENDING MACHINE

Robert L. Schenck, York; George E. Schenck, Dallastown, and Frank W. Senft, York, all of Pa., assignors to Schenck Corporation, York, Pa.

Filed Jan. 13, 1971, Ser. No. 106,032
Int. Cl. B21d *7/02*
U.S. Cl. 72—217 9 Claims

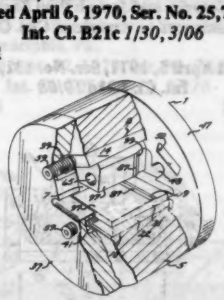


A bending machine for reinforcing rods and the like wherein a rod is placed between two mandrels which are mounted on axles in a mandrel carrier and the carrier and one mandrel is rotated about the axle carrying the other mandrel. Means for holding the fixed axle in firm bearing relationship with a semicircular bearing includes, in one embodiment, a semiannular key surrounding each axle which engages a semicircular key slot concentric with the bearing means for that axle when the axle is the one about which the apparatus rotates. Either axle can be the "fixed" axle about which the carrier rotates, permitting bending in either direction. In another embodiment the means for holding one axle in firm bearing relationship includes a T latch which is movable to either axle, the latch having complementary bearing surfaces.

3,680,348
ADJUSTABLE DRAW DIE

Fernando J. Nino, Torrance, and Donald Q. Cole, Los Angeles, both of Calif., assignors to Harvey Aluminum, (Incorporated), Torrance, Calif.

Filed April 6, 1970, Ser. No. 25,769
Int. Cl. B21c *1/30, 3/06*
U.S. Cl. 72—291 14 Claims



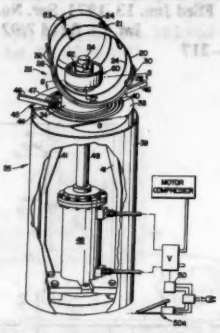
An apparatus for drawing T-shaped members using a die assembly having a pair of die blocks each constructed to adjustably engage two adjoining sides of the members to be drawn. These die blocks can be adjusted simultaneously to uniformly vary the thickness of both the stem and head of a T-bar being drawn.

3,680,349

APPARATUS FOR MAKING A CONDUIT FITTING

Richard W. Horton, Newark, Ohio, assignor to United McGill Corporation, Columbus, Ohio

Division of Ser. No. 736,351, June 12, 1968, Pat. No. 3,587,163. This application June 18, 1970, Ser. No. 57,899
Int. Cl. B21d 39/00
U.S. Cl. 72—316 9 Claims



A thin walled sheet metal conduit tap fitting and a machine and method for forming the same. A tubular barrel workpiece with a wall opening is supported on a saddle-like guide member tool having a bore base passage registering with but larger than the workpiece opening. A die member is pulled downwardly through the workpiece opening into the base to force and stretch the metal surrounding the opening outwardly as permitted by the larger diameter base to form a tap flange on the barrel. The die member and the tool member base passage are dimensionally related so that the metal is initially guidingly stretched by cooperation with the guide member walls and then is freely stretched in space to form a large faired flange to which a branch conduit is readily connected. A plurality of guide members and die members enable the manufacturing of various fittings from a few standardized barrels and cylindrical taps.

ERRATUM

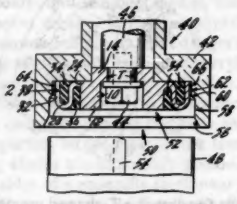
For Class 72—354 see:
Patent No. 3,680,381

3,680,350

NECKING-IN DIE PILOT

John Pavleszek, Colonia, and Joseph Paul Zugcic, Morganville, both of N.J., assignors to American Can Company, Greenwich, Conn.

Filed April 5, 1971, Ser. No. 131,036
Int. Cl. B21d 19/08
U.S. Cl. 72—358 4 Claims



An inner die pilot for use with an outer die of a die set for necking-in, i.e. reducing the diameter of or forming a neck in the end of a can body. The pilot is comprised of a ringed central body portion and an integral, substantially S-shaped collet having a plurality of substantially S-shaped segments defined by slots running substantially radially outward from the periphery of the central body. Each segment includes substantially vertical support members and substantially horizontally arched bridge members adjoining the central body and the support members. The slots in and the areas between the support and bridge members can be filled with a hard but resilient material such as polyurethane.

3,680,351

PLIERS

Kauno Koshinen, Hartola, Finland

Filed Jan. 16, 1970, Ser. No. 3,289
Int. Cl. B21d 9/08
U.S. Cl. 72—409 5 Claims

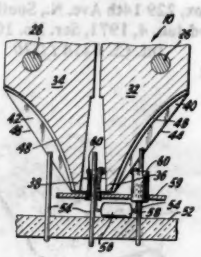
A pair of pliers is provided which has jaws adapted for use in forming dilations in the outer surface of deformable pipes of different diameters. The dilations are formed a predetermined distance from an end of the pipe which distance varies according to the diameter of the pipe. A gauge means, convexly curved with respect to the ends of the jaws of the pliers, is fixed with respect to one of the jaws. The curved nature of the gauge permits rapid alignment of the pliers at the correct depth on pipes of different diameters.

3,680,352

CRIMPING TOOL FOR SOLDERLESS ELECTRICAL CONNECTORS

Richard J. Wunder, Richboro, Pa., assignor to Thomas & Betts Corporation, Princeton, N.J.

Filed Nov. 20, 1969, Ser. No. 878,474
Int. Cl. B21d 9/08
U.S. Cl. 72—410 2 Claims

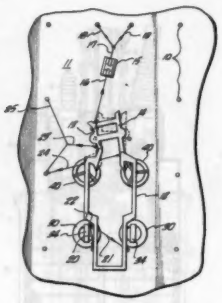


A hand type crimping tool for use with connectors to be applied to small, closely spaced terminals posts is provided with channels along the backsides of the nose portion of the tool to provide clearance for adjacent terminal posts during a crimp operation, and further includes upstanding, integral web sections defining the channel sidewalls which carry crimping loads applied at the nib section of the tool.

3,680,353
APPARATUS FOR AUTOMOBILE DAMAGE CORRECTION

William Kenneth Hagerty, 605 E. Norwood Place, Alhambra, Calif.

Filed April 15, 1970, Ser. No. 28,670
Int. Cl. B21d 3/12, 11/14, 1/14
U.S. Cl. 72—420 10 Claims

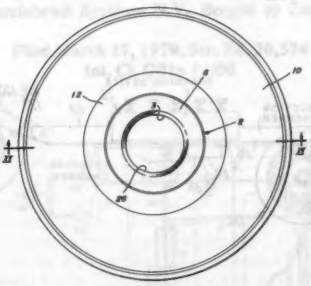


An apparatus for aligning automobile frames and bodies is disclosed having a plurality of anchors attached to the floor and positioned peripherally about the damaged automobile. Force applying and force reaction means are adapted to engage any of the anchors and are operatively applicable to strategic locations on the frame of the automobile from various angular positions to apply corrective and reactive tensile forces thereon to straighten the damaged portion of the automobile. The automobile is supported by movable floor supported bases to enable the automobile to freely align itself properly with respect to the corrective and reactive forces.

3,680,354
DIE ASSEMBLY

William H. Phillips, Jr., Northbergen, N.J., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed March 23, 1970, Ser. No. 21,634
Int. Cl. B21c 3/00; B21d 37/04
U.S. Cl. 72—467 4 Claims

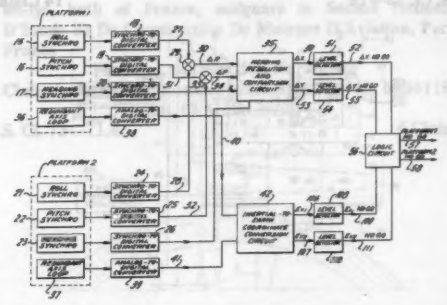


A die assembly for use in forming operations, such as hot extruding wherein the forming insert is frustoconical in shape and is cold pressed into a sleeved support which is contained within a casing with the major base of the insert facing the exit side of the assembly and supported under axial load by a backer bushing affixed to the support casing, said forming insert being substantially radially supported within that section of the sleeved support and casing which is subject to longitudinal anneal by the heat generated in the extruding operation.

3,680,355
METHOD AND APPARATUS FOR PERFORMANCE MONITORING OF DUAL PLATFORM INERTIAL NAVIGATION SYSTEMS

Murray S. Goldstein, Spring Valley, N.Y.; Harold Lerman, Paramus; Robert Acker, Packanack Lakes, and Herbert S. Ross, Emerson, all of N.J., assignors to The Singer Company, New York, N.Y.

Filed Oct. 7, 1970, Ser. No. 78,773
Int. Cl. G01c 17/38
U.S. Cl. 73—1 E 8 Claims

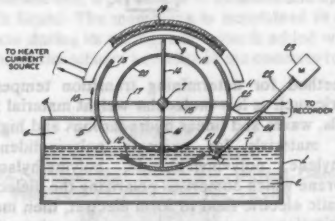


The performance of a dual platform inertial navigation system of the type wherein each platform is stabilized by two, two degree-of-freedom gyros is monitored by utilizing the redundant axis gyro output of each platform to produce an attitude error indication of the GO/NO GO operating condition of the platform about the redundant axis of the platform. The redundant gyro axes of the two platforms are aligned with two, mutually-perpendicular inertial reference axes and the rate output of each redundant axis gyro is sensed, compared with a computed rate output for the corresponding navigation gyro axis, and integrated to provide an attitude error indication for each platform about the redundant axis for that platform. Signals from the roll and pitch synchros of each platform are compared and the difference signals resolved into two attitude error signals representing the attitude error about each of the two inertial reference axes, so that the two redundant axis error signals may be logically compared with the two attitude error signals derived from the synchros to provide a GO/NO GO fault warning signal for each platform.

3,680,356
METHOD AND APPARATUS FOR EVALUATING THERMAL STABILITY OF QUENCHING OILS

George F. Felton, Jr., Brookhaven, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

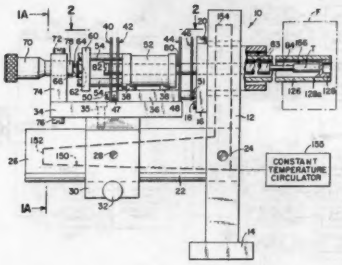
Filed Sept. 22, 1970, Ser. No. 74,363
Int. Cl. G01n 25/00, 33/26
U.S. Cl. 73—15 R 4 Claims



In a testing apparatus for use in evaluating the thermal stability of a quenching oil, a metallic member is first heated to an elevated temperature, then dipped into a bath of the oil to

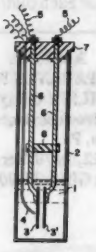
be tested, then withdrawn from the bath for reheating. These steps are automatically carried out in a cyclic, repetitive manner for a preselected number of cycles, following which the oil sample may be chemically tested to determine its degree of degradation, which is an indication of its thermal stability.

3,680,357
DILATOMETER
Gerhard R. Clusener, Box 628, Pt. Washington, N.Y.
Filed Sept. 21, 1970, Ser. No. 74,034
Int. Cl. G01n *25/16*
U.S. Cl. 73—16 14 Claims



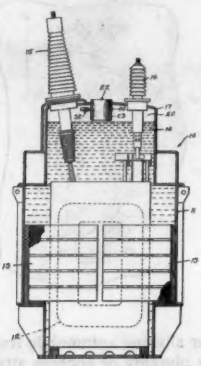
Improved mounting means for the push rod and the linear variable differential transformer of a dilatometer are provided by individual, cantilevered spring means. A ball anvil provides coupling means between the transformer and a micrometer that is used for calibration and zeroing purposes. The core of the transformer, the push rod and the material under test are mounted in tandem.

3,680,358
METHOD FOR DETERMINING TRANSITION TEMPERATURE OF DIELECTRIC
Toshiaki Takamatsu, Tokyo, and Eiichi Fukada, Saitama-ken, both of Japan, assignors to Rikagaku Kenkyusho, Saitama-ken, Japan
Filed July 15, 1970, Ser. No. 55,098
Int. Cl. G01n *25/04*
U.S. Cl. 73—17 3 Claims



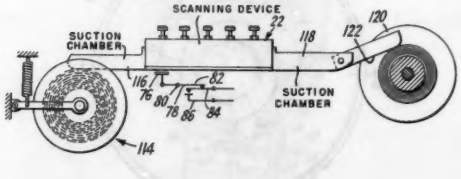
A method for determining transition temperature of a dielectric such as low molecular weight material for example fats, oils, waxes and linear hydrocarbons and high molecular weight materials for example polyvinylidene fluoride, polyethylene, polyvinylchloride, polymethylacrylate and polystyrene which comprises polarizing the dielectric under a high static electric field to form electret, then measuring the depolarization current as temperature thereof being increased, thereby to easily and accurately determine various transition temperatures of the dielectric from the ranges and peaks of the depolarization current.

3,680,359
TRANSFORMER HAVING INCIPIENT FAULT DETECTOR
John C. Lynch, Canonsburg, Pa., assignor to McGraw-Edison Company, Elgin, Ill.
Continuation-in-part of Ser. No. 391,681, Aug. 24, 1964, abandoned. This application May 2, 1968, Ser. No. 734,831
Int. Cl. G01n *27/18*; H02h *7/14*
U.S. Cl. 73—27 R 6 Claims



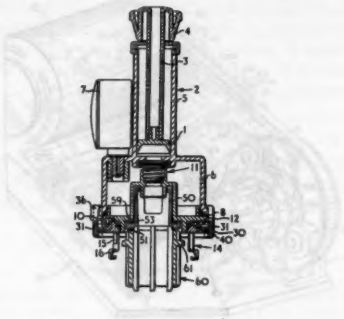
A thermal conductivity gas analysis incipient fault detector for a gas-cushion transformer. The gas from the gas-cushion is continuously circulated to gas analysis cavities and then returned to the gas-cushion. The gas is analyzed by comparison of its thermal conductivity to the thermal conductivity of a standard gas.

3,680,360
TOBACCO LEAF SCANNING DEVICE
Frank Hollenton, Richmond, Va., assignor to AMF Incorporated
Filed Sept. 4, 1970, Ser. No. 69,601
Int. Cl. G01n *15/08*
U.S. Cl. 73—37.5 9 Claims



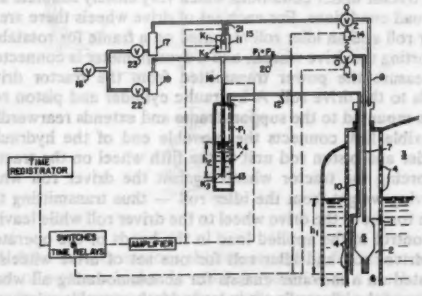
A wrapper, prior to being cut to a cigar wrapper shape having a defined configuration, is arbitrarily divided into a plurality of sections, each substantially pneumatically isolated from each other. Each section is then pneumatically examined for the absence or presence of undesired holes or voids. A single pneumatic examining section can be used with good results. A vein detector can be provided to examine the head section of the strip of tobacco for the presence or absence of veins.

3,680,361
PRESSURE TESTING DEVICE
David John Taylor, Leamington Spa, England, assignor to Sykes-Pickavant Limited, St. Annes-on-Sea, Lancashire, England
Filed Oct. 14, 1970, Ser. No. 80,714
Claims priority, application Great Britain, Oct. 17, 1969, 51083
Int. Cl. G01m 3/32
U.S. Cl. 13—49.2 13 Claims



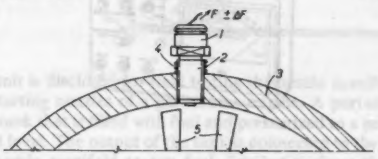
A pressure testing device for testing whether an internal combustion engine cooling system is fluid-tight under normal operating pressure and whether a pressure regulator valve in the filler cap of the cooling system is functioning correctly comprising a pressure chamber, an air pump connected to the pressure chamber to supply air under pressure thereto, a pressure gauge connected to the pressure chamber to indicate the pressure in the chamber and an outlet connection from the pressure chamber for connection to a cooling system filler neck or to a filler cap, the outlet connection having adjustable attachment means suitable for engagement with conventional inter-engagement surfaces of filler necks and of filler caps of a variety of sizes, the device also being provided with at least one adaptor to adapt the outlet connection for sealing engagement with various sizes of filler necks and/or filler caps.

3,680,362
VISCOSIMETER
Dirk J. Geerdes, Woensdrecht, and Cornelis J. Van Vessem, Bergen op Zoom, both of Netherlands, assignors to Kunstharsfabriek Synthese N.V., Bergen op Zoom, Netherlands
Filed March 17, 1970, Ser. No. 20,374
Int. Cl. G01n 11/06
U.S. Cl. 73—56 13 Claims



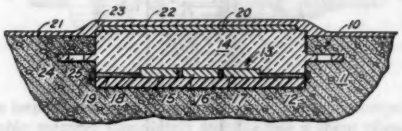
An apparatus for measuring the viscosity of a liquid product in a vessel, for instance, a reaction vessel, a dilution vessel or an evaporator, includes a measuring cell whose measuring chamber is connected to a capillary through which the liquid may be emptied from or filled into the chamber, the time of starting and ending the emptying or filling being accompanied by electric control pulses so that this time interval may be measured and the flow of a gas supplied to the cell under pressure is reversed.

3,680,363
DEVICES FOR DETECTING AND PROCESSING VIBRATIONS OCCURRING IN THE MOVING BLADES OF A ROTARY COMPRESSOR OR SIMILAR APPARATUS
Robert Gustave Holz, Dravell, and Adolf Braun, Dammarie-les-lys, both of France, assignors to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France
Filed Oct. 6, 1970, Ser. No. 78,380
Claims priority, application France, Oct. 7, 1969, 6934118
Int. Cl. G01n 29/00
U.S. Cl. 73—71.4 6 Claims



A device for detecting vibrations in the moving blades of a rotary compressor, comprising a pick-up implanted in the internal edge of the pick-up, the signal from which is applied exclusively to an electronic circuit comprising means for deriving from it the modulation ratio and for deriving from said ratio, when it exceeds a predetermined threshold, an electrical signal. The application of this device is to the suppression of vibrations due to airflow break-up or break-away effects in the blading of aircraft jet engine compressors.

3,680,364
MONITORING HUMIDITY
Roger E. Carrier, 2029 N. Oak Lane, State College, Pa.
Filed June 22, 1970, Ser. No. 48,280
Int. Cl. G01n 33/00
U.S. Cl. 73—73 12 Claims

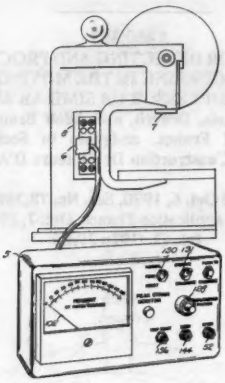


An indicator that changes color with humidity is enclosed by a transparent window that is impermeable to moisture and a base membrane that is permeable to moisture and impermeable to bulk liquid. The membrane is maintained in contact with concrete during its curing, and water is added when the indicator shows the relative humidity in the concrete to be too low.

3,680,365
STRAIN GAGE MONITOR
McGarvey G. Summers, 125 Weller Ave., Dayton, Ohio
Filed Feb. 17, 1970, Ser. No. 11,966
Int. Cl. G01b 7/18
U.S. Cl. 73—88.5 R 2 Claims

The present invention relates to a strain gage monitor for sensing the strain upon a strain gage. The strain gage monitor incorporates a reference bridge for standardizing overall

strain gage monitor circuit parameters to allow for strain gage monitor interchangeability. The strain monitor circuit incorporates oscillator and remote sense amplifier means for remote sensing of strain gage signals. It incorporates electrometer means for storing of strain gage signals. The strain gage monitor incorporates an error amplifier means for correcting spurious strain gage signals whenever improperly stored.

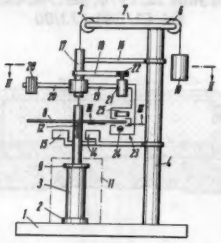


3,680,366

TORSIONAL OSCILLATION DEVICE

Kurt Moser, Freiburg, and Beat Hochli, Bern, both of Switzerland, assignors to Lonza, Ltd., Gampel/Valais (Direction Basel), Switzerland

Filed Nov. 3, 1970, Ser. No. 86,461
Int. Cl. G01n *3/32*
U.S. Cl. 73—99 **4 Claims**



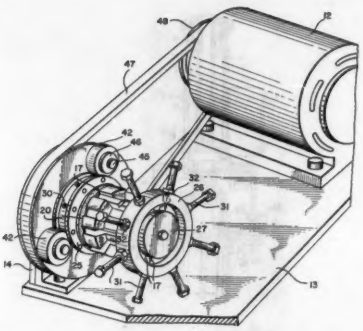
A torsional oscillation device for testing plastics materials having a first clamp for gripping one end of a plastics material sample in a tempering chamber, and a second clamp for gripping the other end of the sample and rigidly connected to an oscillation body. The oscillation body, second clamp and the sample form a torsion pendulum in which oscillations are produced by a means through the oscillation body and a light transducer through a window in the oscillation body produces an electrical signal whose magnitude is dependent on the position of the oscillation body. The output of the transducer is connected to the actual-value input of a variable gain amplifier in a control device that drives a servo-motor which pivots the first clamp about the torsion pendulum axis. The nominal-value input of the control device corresponds to a predetermined relative position of the oscillation body and the part of the transducer not taking part in the pendulum oscillations.

3,680,367

MULTISPECIMEN FATIGUE CRACKING MACHINE

Joseph M. Krafft, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed March 24, 1971, Ser. No. 127,623
Int. Cl. G01n *3/32*
U.S. Cl. 73—100 **6 Claims**



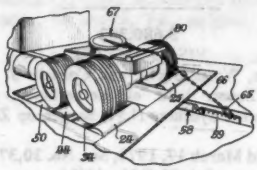
This disclosure is directed to a machine for inserting fatigue cracks in up to eight specimen at once while allowing independent observation and stress control of each specimen. Eight specimen are fixed in a circular arbor and means is provided for repetitively flexing the specimen to cause cracks to initiate and grow from the root of a notch to a desired depth.

3,680,368

SYSTEM FOR MEASURING TRACTIVE POWER WITH CONTROLLED APPLICATION OF LOAD

Arthur J. Warsaw, Colfax, Ill.

Filed July 27, 1970, Ser. No. 58,405
Int. Cl. G01l *5/13*
U.S. Cl. 73—117 **12 Claims**



The system measures horsepower at the drive wheels of a truck tractor under conditions which very closely simulate actual road conditions. For each set of drive wheels there are a driver roll and an idler roll mounted on a frame for rotatably supporting the drive wheels, and a dynamometer is connected to measure the power transmitted from the tractor drive wheels to the drive roll. A hydraulic cylinder and piston rod unit is mounted to the support frame and extends rearwardly. A flexible link connects the movable end of the hydraulic cylinder and piston rod unit to the fifth wheel on the tractor for forcing the tractor wheels against the driver roll while removing weight from the idler roll — thus transmitting the entire torque at the drive wheel to the driver roll while leaving full control of the applied load in the hands of the operator. The driver roll and idler roll for one set of drive wheels is mounted on a movable chassis for accommodating all wheel bases; and the idler rolls are independently movable relative to their associated driver rolls for controlling the distribution of traction between the driver and idler rolls. In a modification, the pulling angle of the flexible link may be set for further controlling the application of torque to the driven roll.

3,680,369

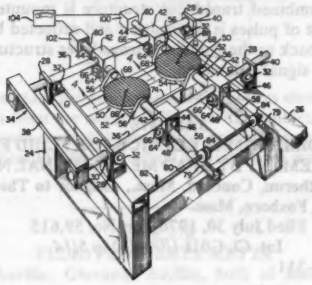
METHOD AND APPARATUS FOR DETERMINING CASTER TRAIL

Marcellus S. Merrill, 335 Colorado Blvd., Denver, Colo.

Division of Ser. No. 499,380, Oct. 21, 1965, Pat. No. 3,494,045. This application Jan. 15, 1970, Ser. No. 7,423

Int. Cl. G01b 5/255

U.S. Cl. 73—117 3 Claims



A method and apparatus for measuring the castor trail of the wheels of a motor vehicle. The apparatus includes a pair of fore and aft spaced, laterally movable velocity sensitive members which contact the wheels at two points of reference. The swinging of the wheels causes the members to move laterally, the resulting velocity of the members of measured and used to determine castor trail.

3,680,370

DRIVE UNIT WITH SLIP INDICATOR FOR MOTOR VEHICLES

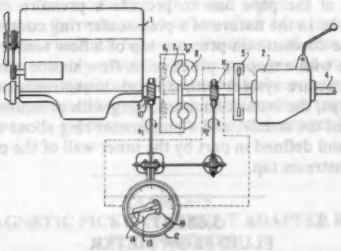
Alfred Hermann Müller-Berner, Waiblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Jan. 30, 1970, Ser. No. 7,067

Claims priority, application Germany, Jan. 31, 1969, P 19 04 694.7

Int. Cl. G01m 13/02

U.S. Cl. 73—118 17 Claims



A drive unit for motor vehicles, especially for commercial-types of motor vehicles, in which in addition to a mechanical change-speed gear a hydraulic coupling or torque converter is provided as starting clutch; a warning installation is arranged in the drive unit which responds to a large slip between the turbine wheel and the pump wheel lasting for a longer period of time.

3,680,371

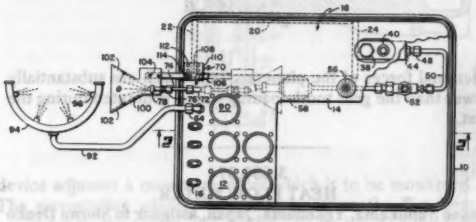
FIELD TEST UNIT FOR A GAS TURBINE FUEL INJECTION SYSTEM

Roger A. Marcio, New Haven, and Orrin J. Winton, Bridgeport, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Feb. 16, 1971, Ser. No. 115,183

Int. Cl. G01m 15/00

U.S. Cl. 73—119 A 2 Claims



A unit is disclosed for field testing the nozzle manifold and fuel starting nozzles of a gas turbine engine. A portable case has a tank that is filled with fuel and pressurized to a predetermined level. The output of the tank is connected to the engine fuel nozzle manifold to test fuel distribution from the main nozzles. The engine starting nozzles are placed on a protractor nozzle support assembly to determine visually their spray pattern.

3,680,372

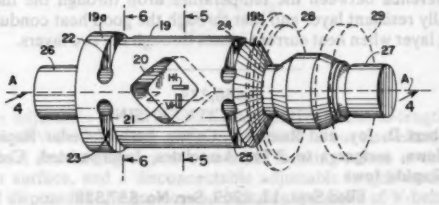
RHOMBIC SHEAR PLATE GAGE LOAD ELEMENT

Alfred Newman Ormond, 11969 E. Rivera Rd., Santa Fe Springs, Calif.

Filed April 27, 1970, Ser. No. 32,303

Int. Cl. G01l 1/22

U.S. Cl. 73—141 A 10 Claims



An improved strain gage load cell or element comprises a rhombic member completely surrounding a shear plate with the plane of the shear plate lying in the plane of the rhombic member. The arms of the rhombic member are integrally formed to the edges of the shear plate so that a force applied to opposite vertices of the rhombic member in the direction of the diagonal between the vertices establishes tension and compression strains in the shear plate. These tension and compression strains may be detected by suitable strain gage means to provide an output signal indicative of the applied forces.

3,680,373

GEAR TESTING DEVICE

Arman L. Kearfott, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

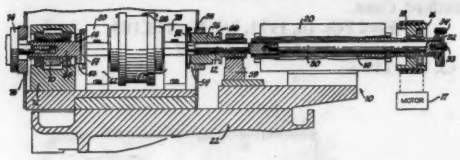
Filed Nov. 16, 1970, Ser. No. 89,827

Int. Cl. G01m 13/02

U.S. Cl. 73—162 4 Claims

Gear testing device in which planetary test unit has a sun, a ring and two independent planet gears. Separate carriers are provided for the planet gears with a first carrier connected to

ground and the other carrier loaded torsionally so that the gearing of the planetary unit is loaded. Torsional driving forces for the device are only those necessary to overcome the

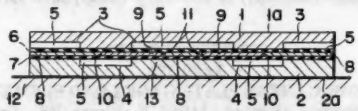


frictional forces of the planetary unit which are substantially lower than the gear tooth loading forces generated during the test.

3,680,374
HEAT FLOW METER

Sadao Sumikama, Yokohama, Japan, assignor to Showa Denko K.K., Minato-ku, Tokyo, Japan

Filed Sept. 24, 1970, Ser. No. 75,230
Claims priority, application Japan, Sept. 24, 1969, 44/75298
Int. Cl. G01k *17/00*
U.S. Cl. 73—190 H **6 Claims**

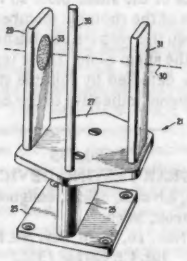


A heat flow meter so arranged that a temperature measuring body is provided adjacent to thin plates having layers of thermally resistant material and equally thick layers of good heat conducting material provided in the same levels as those of said thermally resistant body layers and can measure the difference between the temperature drop through the thermally resistant layer and that through the good heat conducting layer when heat current passes through the two layers.

3,680,375
SONIC VELOCITY SENSING

Robert D. Joy, and Russell F. Colton, both of Cedar Rapids, Iowa, assignors to J-Tec Associates, Incorporated, Cedar Rapids, Iowa

Filed Sept. 12, 1969, Ser. No. 857,328
Int. Cl. G01p *5/00*
U.S. Cl. 73—194 B **28 Claims**

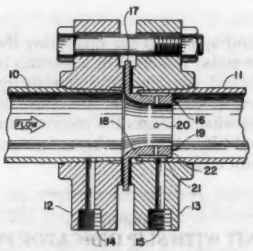


This disclosure describes a method and apparatus for determining the relative velocity between an object and a fluid stream. A vortex strut attached to the object is located in the fluid stream so as to generate Karman vortices at a frequency proportional to the relative velocity between the object and the stream. In one embodiment, a sonic signal transmitting transducer is located on one side of the strut's wake and a sonic signal receiving transducer is located on the other side of the wake. The transmitting transducer's signal is modulated by the Karman vortices and received by the receiving transducer. An electronic detecting system is connected to the signal receiving transducer for detecting the modulations created by the Karman vortices. An alternate embodiment of the invention combines the sonic signal transmitting transducer and the sonic signal receiving transducer in a single transducer structure. The combined transducer structure is mounted in the strut. A burst of pulses is transmitted and reflected by a Karman vortex back to the combined transducer structure where the reflected signal is detected.

3,680,376
LOW NOISE PRIMARY DEVICE FOR FLUID FLOW MEASUREMENT BY HEAD METER (SIGNAL NOISE)

Allan R. Catheron, Concord, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed July 30, 1970, Ser. No. 59,615
Int. Cl. G01f *1/00*; G01p *5/14*
U.S. Cl. 73—211 **1 Claim**



Structure for use in a differential pressure sensor system for relatively noise-free measurement of fluid flow. A streamlined nozzle device usable in a pipe line as an element of, and compatible with accepted forms of, flow measurement sensor systems. Such a nozzle form readily insertable in an existing flow measurement sensor system to reduce noise by substituting a streamlined nozzle form for an existing downstream turbulence creating form such as an orifice plate. A flow measurement device in nozzle from with the throat of the nozzle form pressure tapped to a channel in the outer periphery of the nozzle form throat, this channel essentially closable by the inner wall of the pipe line to provide a pressure chamber which may be in the nature of a piezometer ring communicating with the downstream pressure tap of a flow sensor system compatible with accepted practice. A flow sensor nozzle differential pressure system with up and downstream pipe line pressure taps, the latter communicating with pressure taps in the throat of the nozzle, and a piezometer ring about the nozzle throat and defined in part by the inner wall of the pipe line at the downstream tap.

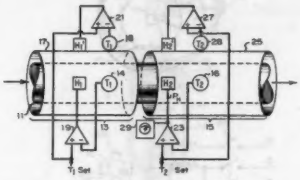
3,680,377
FLUID FLOW METER

Gene E. Lightner, Kennett Square, Pa., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 17, 1970, Ser. No. 64,328
Int. Cl. G01f *1/00*
U.S. Cl. 73—204 **9 Claims**

A fluid is passed through first and second thermally conductive porous conduit elements spaced apart from one another along the path of fluid flow. A heater and a temperature sensor are mounted on each porous element and operated to

maintain the two elements at constant preset differential temperatures. Flow rate of the fluid is indicated by the electrical power supplied to the heater on the second porous element to maintain the preset temperature differential. Temperature

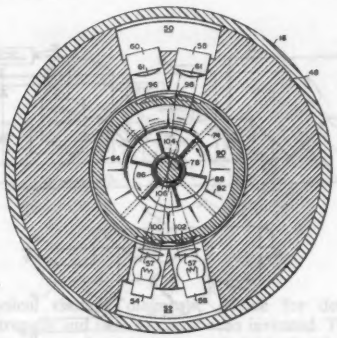


controlled metal cylinders surround the porous elements to insulate them from the adverse effects of the ambient temperature. A shaped conduit between the porous elements further minimizes heat loss from the fluid and improves measurement accuracy.

3,680,378
FLUID FLOW RATE METER

Giuseppe Aurilio; Giovanni Aurilio, both of Medford, and Valentine T. Faust, Jr., Manchester, all of N.H., assignors to Fibre-Optics Industries, Inc., Milton, Mass., by said Giuseppe Aurilio and Giovanni Aurilio

Filed Sept. 11, 1970, Ser. No. 71,401
Int. Cl. G01f *3/00*
U.S. Cl. 73—231 R **13 Claims**



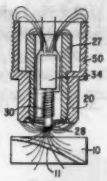
A device for producing electrical pulses at a rate corresponding to the volume flow rate of air in a passage, with means to discriminate between directions of flow. A vane member is rotatably mounted in the passage and surrounded by a distensible diaphragm. The vaned turbine member has a transverse aperture through which light impulses travel from a light source to a photocell both mounted externally of the passage.

3,680,379
MAGNETIC PICKUP ELEMENT ADAPTER FOR FLOWMETERS

Charles L. Boyd, Duncan, Okla., and James D. Roach, Yuma, Ariz., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 2, 1969, Ser. No. 881,493
Int. Cl. G01f *1/10*
U.S. Cl. 73—231 R **4 Claims**

An apparatus are provided for reducing the non-linear readout characteristics of such magnetic sensing and measuring devices as turbine type flowmeters. An adapter bushing is used to mount an electromagnetic pickup element within a turbine type flowmeter. The body of the meter into which the pickup element is mounted consists of a material having a low permeability, while the adapter consists of a ferromagnetic material having a high permeability. In operation, the electromagnetic pickup element is disposed within the body of the

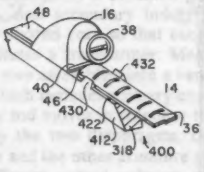


device adjacent a moving member which is to be monitored. The surrounding adapter functions to shape the flux lines generated by the pickup element into a path having a low flux density in the area adjacent the moving member which low density, in turn, reduces the magnetic drag on such member.

3,680,380
ADJUSTABLE V-BELT ASSEMBLY

Charles R. Kurrle, R.D. 2, Box 15 MacPhail Rd., Baltimore, Md.

Filed April 16, 1971, Ser. No. 134,710
Int. Cl. F16g *5/00, 13/02*
U.S. Cl. 74—234 **10 Claims**



An adjustable V-belt assembly comprising a cut-to-length piece of V-belting made of relatively flexible but non-elastic material and having a groove or other locating means in the outer surface, and a disconnectable adjustable length metal band disposed in the groove and securing the piece of V-belting in closed-loop configuration with the belting ends abutting; interlocking ends for the belting are also disclosed. By means of the cut belting and the disconnectable band, the belting can be applied to pulleys to be connected without any need for loosening or disassembling pulleys or pulley mounts, and exact fit is assured.

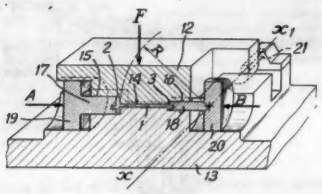
3,680,381
METHOD OF AND APPARATUS FOR FORMING PARTS WITH RE-ENTRANT SURFACES

Pierre Portal, Bologne, France, assignor to S.A. Forges de Bologne, Bologne, France

Filed Nov. 23, 1970, Ser. No. 92,045
Claims priority, application France, Dec. 19, 1969, 6944249
Int. Cl. B21j *13/02*
U.S. Cl. 72—354 **2 Claims**

A turbine or compressor blade with projections adjacent each end having one or more arcuate re-entrant surfaces is initially forged and is finish formed, either hot or cold, in a mould which defines the aerodynamic portion of the blade. The projections are finish formed by punches and after retraction of

the punches, the mould halves are separated by a pivotal movement about an axis which contains the center of curvature of the arcuate re-entrant surfaces thus enabling the formed blade to be removed.

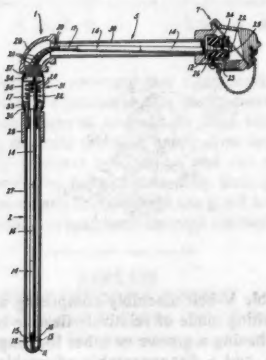


3,680,382

THERMOCOUPLE PROTECTION TUBE FOR USE IN MOLTEN METAL

I. Clifford Valden, Loves Park, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed June 8, 1970, Ser. No. 44,290
Int. Cl. G01k *1/14*
U.S. Cl. 73—343 R 8 Claims



A shock spring provides flexibility between a Zircon protection tube for an immersion thermocouple and its mounting to reduce the possibility of breakage of the tube when it is struck by a ladle or other object.

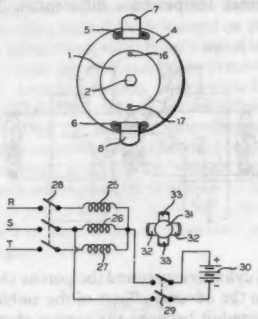
3,680,383

GODETS WITH CONTACTLESS TRANSMISSION UNITS IN ELECTRICALLY OPERATED SENSING CIRCUITS

Alfons Erbacher, Grossostheim, Germany, assignor to Glanzstoff AG, Wuppertal, Germany

Filed Dec. 22, 1969, Ser. No. 886,833
Claims priority, application Germany, Dec. 31, 1968, P 18 17 612.0
Int. Cl. G01k *13/00, 13/08*
U.S. Cl. 73—351 11 Claims

Godets for textile machines are provided with a Wien-Robinson measuring bridge revolving with the godet, the input and output of which is connected with a contactless transmission device mounted on the godet circumference. Two contactless transmission devices are mounted in fixed position, past which run the orbiting transmission devices. Magnetically



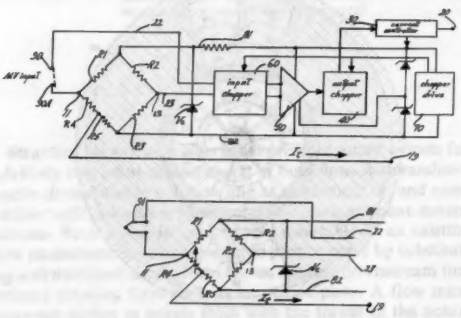
functional members stop the godet in predetermined rest position with the transmission devices aligned.

3,680,384

TWO WIRE TELEMETRY SYSTEM

Earl A. Grindheim, Minneapolis, Minn., assignor to Rosemount Engineering Company, Minneapolis, Minn.

Continuation-in-part of Ser. No. 661,988, Aug. 21, 1967, abandoned. This application Aug. 20, 1968, Ser. No. 753,937
Int. Cl. G01k *7/12*; G05f *1/58*; G08c *19/02*
U.S. Cl. 73—361 11 Claims



Measuring circuitry including a current controller which has an internal amplifier, and which controls current in response to differential input signals, is excited by an external power source. A reference voltage is established, and a separate voltage signal is also developed from a separate voltage source such as a thermocouple. The reference voltage is compared at an amplifier input with the voltage signal. A voltage is developed across a feedback resistor, and the total current through the circuitry adjusts until the feedback signal balances the signal inputs to the current controller. Total current drawn is thus a function of the voltage signals.

3,680,385

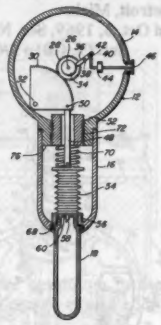
DIAL THERMOMETER

Robert J. Moran, Littleton, and Louis P. Marsilia, East Boston, both of Mass., assignors to Cardinal Instrument Corporation, Cambridge, Mass.

Filed July 20, 1970, Ser. No. 56,349
Int. Cl. G01k *5/42*
U.S. Cl. 73—368.4 5 Claims

A precision thermometer is provided for medical use. The thermometer is equipped with a detachable and disposable

probe tip containing a charge of fluid the pressure of which changes with temperature. The tip seals to extensible bellows



which operates a dial indicator to show the temperature reading. A reset button is provided to lock the indicator at the recorded temperature until manually released.

3,680,386

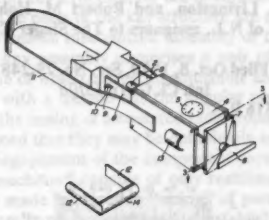
PHYSICAL THERAPY DIAGNOSTIC DEVICE

Emerson T. Cannon, Salt Lake City, Utah, assignor to Utah Research & Development Co., Inc., Salt Lake City, Utah

Filed May 6, 1970, Ser. No. 34,992

Int. Cl. G01l 5/02

U.S. Cl. 73—379 R **4 Claims**



A physical therapy diagnostic device for determining muscle strength and tone has now been invented. The device comprises energy absorbing means and an absorbed energy measuring device associated therewith. The energy absorbing means may be a fluid filled cylinder containing a piston connected to a body or muscle contacting member. The energy absorbing means can be rigidly attached to a housing to which pressure may be applied to force the body contacting member against a particular muscle, limb or other body part. The resistance of the muscle, limb or the like to movement causes energy to be absorbed by the energy absorbing means, the quantity of energy absorbed being observable from the measuring device.

3,680,387

DIFFERENTIAL PRESSURE TRANSDUCER

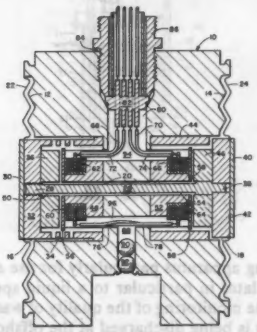
Lloyd T. Akeley, Fullerton, Calif., assignor to Beckman Instruments, Inc.

Filed Dec. 2, 1970, Ser. No. 94,400

Int. Cl. G01l 9/10

U.S. Cl. 73—398 R **12 Claims**

A differential pressure measuring transducer is disclosed which includes a substantially rigid housing. The housing has two opposed end faces, a first centrally disposed cavity in a first end face, a second centrally disposed cavity in a second end face, and a passage connecting the two cavities. A first pressure responsive diaphragm is disposed adjacent the first end face and sealed thereto along its periphery. A second pressure responsive diaphragm is disposed adjacent the second end face and sealed thereto along its periphery. A rod extends through the passage and engages at each end a respective diaphragm. A first armature plate is attached to the rod adjacent the first diaphragm and a second armature plate is attached to the rod adjacent the second diaphragm. A first core is positioned in the first cavity contiguous with the housing and spaced from the first armature. The core has a centrally disposed opening therein in alignment with the passage, through which the rod may slide. A second core is positioned in the second cavity contiguous with the housing and spaced from the second armature. The second core also has a centrally disposed opening therein in alignment with the passage, through which the rod may slide. A first primary and secondary inductive coil assembly is mounted in the first core and a second primary and secondary inductive coil assembly is mounted in the second core so that each armature and core assembly constitutes a transformer. Means are provided for connecting the core assemblies into a variable inductive measuring circuit which includes primary energizing means. As a result, when the rod moves in response to differing pressures being sensed by the two diaphragms, one armature moves toward one core and the other armature moves away from the other core. Different output voltages are induced in each secondary coil with the difference between the two voltages being proportional to and a measure of the pressure differential being sensed by the diaphragms.



3,680,388

SAMPLING OF GASEOUS ATMOSPHERES

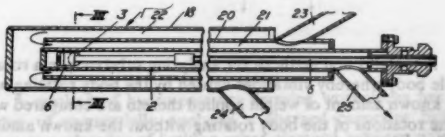
Derek Critchley, St. Helens; Frank Dawber, Upholland, near Wigan, and Kenneth Frederick Grainger, St. Helens, all of England, assignors to Pilkington Brothers Limited, Liverpool, England

Filed Oct. 20, 1969, Ser. No. 867,759

Claims priority, application Great Britain, Nov. 1, 1968, 51,863/68

Int. Cl. G01n 1/24

U.S. Cl. 73—421.5 R **14 Claims**



The content of a water-insoluble gas in an atmosphere is analyzed by drawing a sample of the atmosphere into an

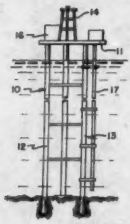
analyzer by means of a steam ejector pump, the pressure of the steam supply being regulated so that the sample is drawn into the analyzer at a pressure greater than atmospheric pressure.

3,680,389

SAMPLING APPARATUS FOR WASTE DISPOSAL SYSTEM

Frederick H. Binkley, Jr., Gretna; Eldred S. Lanier, Jr., New Orleans, and Robert G. Barrilleaux, Slidell, all of La., assignors to Texaco Inc., New York, N.Y.

Filed May 28, 1971, Ser. No. 148,039
Int. Cl. G01n 1/12
U.S. Cl. 73—421 B **9 Claims**



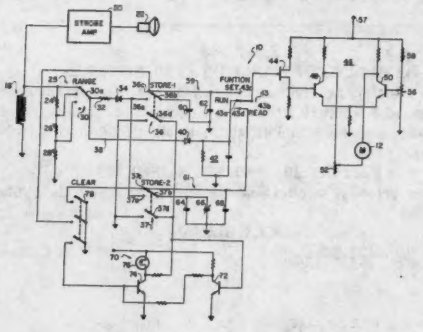
A sampling apparatus particularly for use at an offshore location. It relates in particular to a liquid specimen collector utilized in the monitoring of the quality of waste contaminated water which is being discharged at the offshore location. The apparatus includes guide means whereby a specimen or sample water collector can be lowered to a desired water depth. The water collector unit embodies a spring actuated container which is lowered from the water's surface in a closed condition such as to acquire a liquid sample when actuated to an opened position.

3,680,390

APPARATUS AND METHODS FOR ANALYZING UNBALANCE IN ROTATABLE BODIES

Thomas E. Bjorn, Northbrook, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed July 9, 1970, Ser. No. 53,512
Int. Cl. G01m 1/22, 1/18
U.S. Cl. 73—457 **13 Claims**



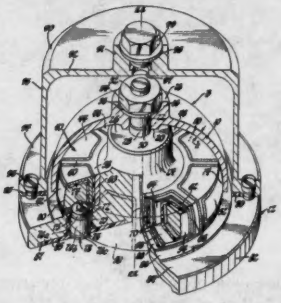
Apparatus and methods for analyzing substance in a rotatable body whereby vibrations caused by the body rotating with a known amount of weight applied thereto are compared with the rotations of the body rotating without the known amount of weight. Vibration signals storage means enable the signals to be applied to a meter as desired and adjustment means for the meter are provided so that the meter may be calibrated for direct readout of the amount of unbalance.

3,680,391

BELL GYRO AND METHOD OF MAKING SAME

Richard E. Denis, Beverly, Mass., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 6, 1969, Ser. No. 863,861
Int. Cl. G01p 9/04
U.S. Cl. 73—505 **8 Claims**



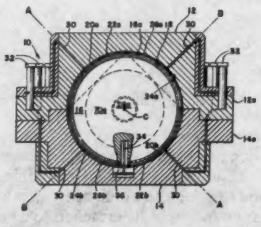
A unit for sensing motion of a platform about an input axis, the same being defined by a post upstanding from the platform, a bell-like high-Q member supported by the post and depending therefrom in telescopic relation to the axis, and radial-mode forcers and radial-mode sensors supported by the platform and post within the confines of the bell-like member.

3,680,392

THREE-AXIS ACCELEROMETER

Jay Hoffman, Livingston, and Robert M. Hohenstein, Glen Ridge, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Oct. 8, 1970, Ser. No. 79,248
Int. Cl. G01p 15/08
U.S. Cl. 73—516 R **3 Claims**



A three-axis electrostatic accelerometer in which a proof mass is adapted to move relative to a casing with respect to three reference positions established along three coordinate axes, in response to accelerations along these axes. A signal is generated in response to the proof mass movement, and the proof mass is restored to a null position by means of an electrostatic force.

3,680,393

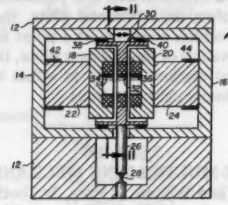
ACCELEROMETER

Herbert Rogall, Maplewood, N.J., assignor to The Singer Company, New York, N.Y.

Filed Oct. 27, 1969, Ser. No. 869,611
Int. Cl. G01p 15/08
U.S. Cl. 73—517 B **8 Claims**

An accelerometer in which a pendulum is normally aligned in a gap defined by a pair of spaced magnets, and is adapted to

move relative to the magnets in response to an acceleration and generate a signal. A magnetic field is created in proportion to the signal which interacts with the magnetic flux from



the magnets, causing the pendulum to realign, and the flux level from each magnet can be regulated in order to compensate for non-linearities.

3,680,394

PUSH-BUTTON KEY ASSEMBLY

Alvin E. Thompson, North Wales, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed Oct. 19, 1970, Ser. No. 81,897

Int. Cl. F16h *35/18*

U.S. Cl. 74—10.33 **5 Claims**

Push-button key structure, for use in adjustable radio tuning apparatus. The parts of the key structure are constructed and arranged to enable mechanized assembly of the push-button keys. Each key assembly comprises a pair of elongate slide members one of which carries an adjustable and lockable cam engageable with a treadle bar the angular position of which determines the tuning of associated radio apparatus. The keys are so designed that they may be completely assembled by interlocking engagement of the component parts thereof, using automatic machinery capable of only rectilinear movements. Provision is made for forcible "sizing" of parts of the key to maintain them in proper position and establish the tolerances required to ensure proper operation of the cam.

3,680,395

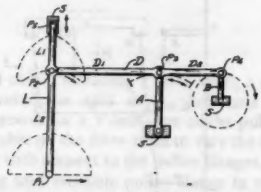
WALKING LEG LINKAGE AND PROPULSION MECHANISM

Kenneth R. Douglas, 3760 Davie Blvd., Fort Lauderdale, Fla.

Filed March 13, 1970, Ser. No. 19,268

Int. Cl. F16h *21/22*

U.S. Cl. 74—42 **2 Claims**



A device for propelling a vehicle across a planar surface without an axle or wheels. Each supporting point on the vehicle is comprised of a plurality of walking legs that are mechanically coupled to a source of rotational energy, a plurality of legs being so positioned with respect to each other that only one given leg is in contact with the planar surface at any given instant of time. The planar contacting point of each leg is moved in a closed path, the particular segment in contact with the planar surface being a linear direction only.

3,680,396

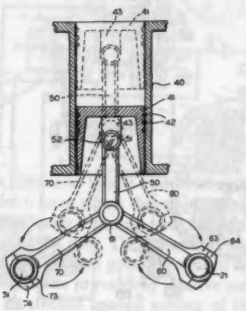
DUAL CRANKSHAFT INTERNAL COMBUSTION ENGINE

Elton F. Healy, 6 Chace Ave., Warren, R.I.

Filed Sept. 4, 1970, Ser. No. 69,564

Int. Cl. F16h *21/22*

U.S. Cl. 74—44 **9 Claims**



A pair of crankshafts is rotatively mounted in a crankcase and carries respectively at the ends thereof pairs of intermeshing gears for synchronizing the shafts. A reciprocating piston in a cylinder carries a main connecting rod. A pair of subconnecting rods is rotatively secured to each other and to the lower end of the main connecting rod, which subconnecting rods are respectively secured to the cranks and the crankshafts.

3,680,397

METHOD OF FORMING WORKPIECES BY MEANS OF UNDERWATER IMPACT PRESSURE

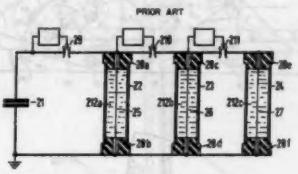
Jochen Haeusler, Nurnberg-Laufamholz; Gunther Marz, and Helmut Seiffert, both of Nurenberg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed March 5, 1970, Ser. No. 16,736

Claims priority, application Germany, March 6, 1969, P 19 11 424.0

Int. Cl. B21d *26/10*

U.S. Cl. 72—56 **3 Claims**

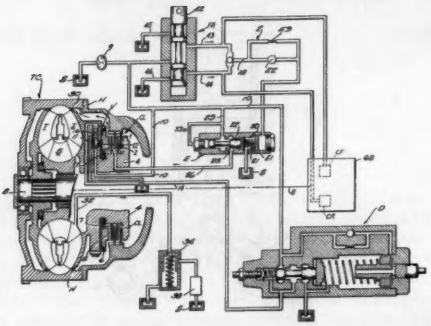


A method of hydro-pressure forming workpieces has the step of sequentially applying a charged capacitor battery across a plurality of ignition wires clamped between pairs of underwater electrodes defining corresponding spark gaps so that each successive ignition occurs at a time when the current in the immediately preceding ignition wire ceases to flow.

3,680,398
TORQUE CONVERTER POWER TRANSMISSION HAVING REGULATING VALVE MEANS

Raymond C. Schneider, Rockford, and Robert W. Meyer, Pecatonica, both of Ill., assignors to Twin Disc Incorporated, Racine, Wis.

Continuation of Ser. No. 550, Jan. 5, 1970, abandoned. This application Aug. 13, 1971, Ser. No. 171,428
Int. Cl. B60k *21/00*
U.S. Cl. 74—733 4 Claims

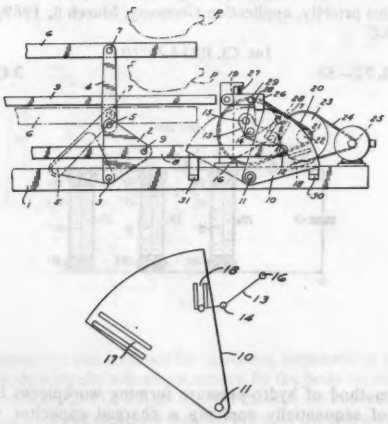


A power transmission having a torque converter which is driven from a hydraulically actuated, modulatable friction clutch, and a fluid power control system for such a transmission and which prevents the impeller of the torque converter from turning over backwards when the direction of travel of the vehicle is reversed. The control system includes control valve mechanism which insures that a minimum pressure will be acting on the impeller during the direction reversing shift to thereby prevent the impeller from being rotated backwards.

3,680,399
MULTIPLE STEP INDEXING AND REVERSING DRIVE MECHANISM

John H. Brems, 32867 White Oaks Trail, Birmingham, Mich.

Filed June 22, 1970, Ser. No. 48,374
Int. Cl. F16h *27/02*
U.S. Cl. 74—89 6 Claims

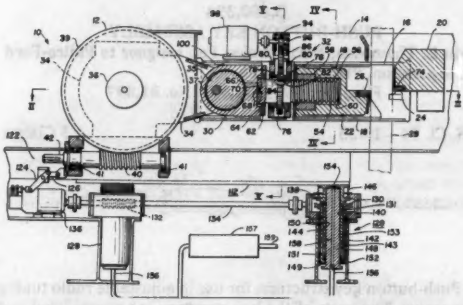


A multiple step indexing and reversing drive mechanism to provide shock free starting and stopping with a reduced velocity section intermediate multiple velocity peaks for use, for example, in transfer mechanisms for lifting parts to and lowering parts from a work station which includes an acceleration and velocity control device incorporating spaced drive pins revolving on a common axis and positioned to enter and leave respective slots on a follower plate, these slots being disposed on lines which converge at a point near but spaced from an axis of rotation of the follower plate, the angles of the slots being related mathematically to effect the desired acceleration and velocity characteristics.

3,680,400
FORCE-MULTIPLYING MECHANISMS

Herbert Lemper, and William J. Snee, Jr., both of Pittsburgh, Pa., assignors to Mesta Machine Company, Pittsburgh, Pa.

Division of Ser. No. 544,198, April 21, 1966, Pat. No. 3,453,914. This application May 14, 1969, Ser. No. 870,062
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 11 Claims

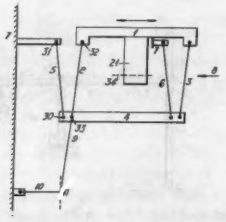


We disclose, in force-multiplying apparatus adapted for elevating heavy loads and the like, the combination comprising mechanical advantage means disposed to translate a relatively smaller input force to a relatively larger elevating force, and means for continuously applying a fluid pressure to the elevating component of said mechanical advantage means.

3,680,401
COORDINATE TABLE

Brian Herbert Shaw, Hove, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 7, 1970, Ser. No. 35,367
Claims priority, application Great Britain, May 13, 1969, 24,412/69
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 3 Claims



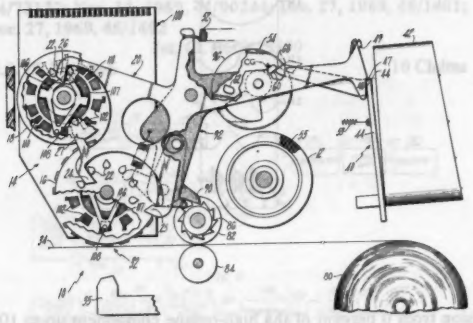
An X-$\bar{Y}$ coordinate table wherein straight line motion is provided by a frame member which is coupled to the top of said coordinate table via linkages in such a manner that any circular arc motion of the table top is compensated for by an opposite circular arc motion of the frame member.

3,680,402

WHEEL INDEXING MECHANISM

Ernest G. Hoffman, Middlefield, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Sept. 8, 1970, Ser. No. 70,343
Int. Cl. F16h *29/02*
U.S. Cl. 74—125 **13 Claims**



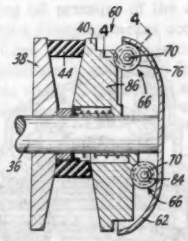
A printer having a plurality of decades each having a pivotal verge and print and readout wheels adapted to be simultaneously indexed by the verge. An eccentric rotatably mounted on the verge engages a power roll for oscillating the verge for indexing the wheels, and an electromagnet having an armature for latching the verge and eccentric is operable for releasing the latch for indexing the wheels.

3,680,403

CENTRIFUGAL CLUTCH ASSEMBLY

Fred A. Schupan, York, Pa., assignor to AMF Incorporated

Filed Aug. 27, 1970, Ser. No. 67,413
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 E **4 Claims**



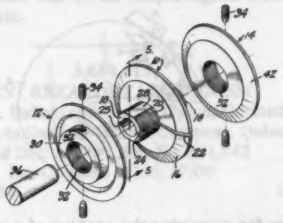
In a centrifugal clutch including a drive shaft, a pair of pulley flanges mounted on said drive shaft and providing therebetween a groove for a V-belt, one of the pulley flanges being axially movable on the drive shaft to vary the radial position of the V-belt with respect to the pulley flanges, apparatus for axially moving said movable pulley flange in response to the angular velocity of the drive shaft, comprising a cam ramp fixedly mounted to said drive shaft in spaced relationship with the side of the movable pulley flange away from the other pulley flange, said cam ramp including a portion curved toward said movable pulley flange, and a weight mounted for rolling radial movement on said movable pulley flange and on said cam ramp.

3,680,404

VARIABLE PITCH SHEAVE

David Firth, 1441 E. Jefferson Blvd., South Bend, Ind.

Filed Nov. 2, 1970, Ser. No. 85,889
Int. Cl. F16h *55/22*; F16d *1/06*
U.S. Cl. 74—230.17 C **10 Claims**



A variable pitch sheave in which cooperating belt-engaging disks have hubs which have screw threaded interfit. The inner hub and its disk has kerfs defining two hub clamping parts connected by a part of the disk. The outer hub has at least one set screw threaded therein and pressing against the inner hub to serve the dual functions preventing relative rotation of the disks to maintain a selected spaced setting of the disks and clamping the inner hub upon a shaft.

ERRATUM

For Class 74—234 see:
Patent No. 3,680,380

3,680,405

SHIFTING LEVER FOR MOTOR VEHICLES TRANSMISSIONS

Willy R. Naumann, Plattenhardt; Wilhelm Albrecht, Vaihingen, and Egon Wieland, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

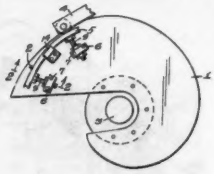
Filed Sept. 10, 1970, Ser. No. 71,179
Claims priority, application Germany, Jan. 29, 1970, P 20 03 873.7
Int. Cl. G05g *1/06*
U.S. Cl. 74—523 **5 Claims**

A shifting lever for a motor vehicle transmission which essentially consists of a metallic insert surrounded by a padding of foamed material and provided at its upper end with a plate deformable in case of impact thereagainst by a vehicle passenger.

3,680,406
FLEXIBLE CAMS

Clarence C. Bush, Belair City, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed June 7, 1971, Ser. No. 147,091
Int. Cl. F16h *54/04*
U.S. Cl. 74—568 FS 8 Claims

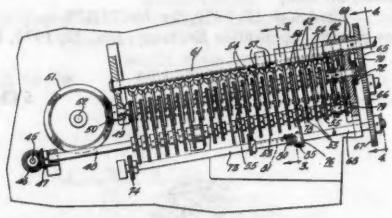


A means for correcting the contour of a cam partially or throughout its entire periphery without the labor of reshaping or even discarding the original cam. The means consists of a flexible band of steel which is adjustably attached at predetermined points to the side of the original cam. The band is then adjusted radially to the desired contour by set screws at the aforesaid points to obtain the contour correction. The cam follower will then ride on the adjusted flexible cam instead of the original one.

3,680,407
VIBRATION DAMPENER FOR MOTOR VEHICLE DRIVE SHAFT

Ekkehard Doehring, and Peter Kirschner, both of Wolfsburg, Germany, assignors to Volkswagenwerk Akt., Wolfsburg, Germany

Continuation of Ser. No. 837,151, June 27, 1969, abandoned. This application May 10, 1971, Ser. No. 141,503
Claims priority, application Germany, July 2, 1968, P 17 55 860.0
Int. Cl. F16f *15/02*
U.S. Cl. 74—574 10 Claims



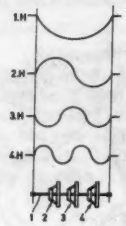
Vibrations are dampened in a normally straight drive shaft for automobiles through the use of a plurality of cylindrical vibration dampening masses disposed at locations on the shaft corresponding to the nodal points of the smallest harmonic of the natural bending frequency of the shaft occurring at a rotational speed greater than the maximum normal operating speed of the shaft.

3,680,408
FLEXIBLE PRICING ARRANGEMENT FOR LIQUID DISPENSING APPARATUS

Einar T. Young, Newtown Square, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 50,019, June 26, 1970. This application Sept. 24, 1970, Ser. No. 75,093
Int. Cl. F16h *37/06*; B67d *5/22*
U.S. Cl. 74—681 4 Claims

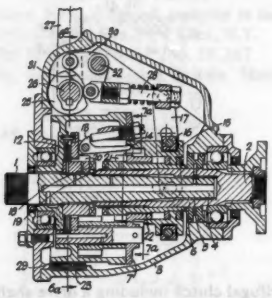
In a multi-grade liquid fuel dispensing apparatus wherein discrete blends of a relatively low-octane or minimum-octane fuel component and a relatively high-octane or maximum-octane fuel component may be selectively dispensed, in addition to either component unblended, and wherein the composition of the fuel grades is arranged in an orderly stepwise progression from 0 percent of the high-octane component up to 100 percent of the high-octane component, an arrangement is provided for allowing one of the grades (e.g., the low-octane fuel component) to be dispensed (sold) at various prices equal to or above those of other grades.



3,680,409
REVERSIBLE TRANSMISSION WITH FRICTION AND POSITIVE CLUTCHES

Alan Hawker Chamberlain, 95 Dow St., Toorak, Victoria, Australia

Filed Nov. 12, 1970, Ser. No. 88,966
Claims priority, application Australia, Nov. 13, 1969, 63754/69
Int. Cl. F16k *15/56*
U.S. Cl. 74—792 4 Claims



A reversible power transmission comprising input and output shafts, a planetary gear train coupled to the input shaft and incorporating a friction clutch operable to effect transmission of light torque loads to the output shaft without change in the direction of rotation, and a dog clutch operable in sequence with the friction clutch to couple the input and output shafts after engagement of friction clutch to transmit heavy torque loads.

3,680,410

ACTUATING OIL PRESSURE CONTROL SYSTEM FOR TORQUE CONVERTER AUTOMATIC TRANSMISSION

Masaharu Sumiyoshi; Osamu Ito, both of Toyota; Hisato Wakamatsu, Kariya; Takaaki Kato, and Hisasi Kawai, both of Toyohashi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi and Nippondenso Kabushiki Kaisha, Kariya-shi, Japan

Filed Aug. 11, 1970, Ser. No. 62,793

Claims priority, application Japan, Sept. 13, 1969, 44/73132; Nov. 11, 1969, 44/90244; Dec. 27, 1969, 45/1401; Dec. 27, 1969, 45/1402

Int. Cl. B60k *21/00*

U.S. Cl. 74—866 10 Claims

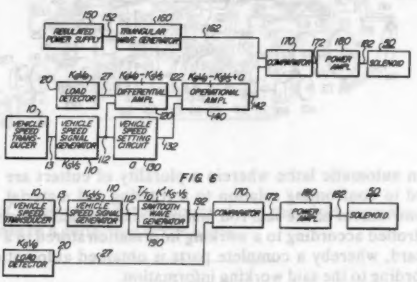


FIG. 6

In a torque converter automatic transmission comprising a torque converter, a speed change gear having friction engaging means, and a hydraulic actuation circuit to supply pressure oil to the friction engaging means, an actuating oil pressure control system comprising a vehicle speed detecting circuit for generating an electrical signal corresponding to the vehicle speed, a load detecting circuit for generating an electrical signal corresponding to the vehicle loading, an operational circuit adapted to receive as the inputs thereto and operate on the output signals from said two detecting circuits in accordance with an equation so as to generate an output voltage, a sawtooth voltage having a constant period, a comparator circuit for comparing the output sawtooth voltage of the sawtooth wave generating circuit with the output voltage of the operational circuit to generate a rectangular voltage having a time width corresponding to said equation, and means for varying the actuating oil pressure of the oil under pressure supplied to the friction engaging means according to the output rectangular voltage of the comparator circuit, whereby said actuating oil pressure is controlled in accordance with variations in the time width of the output rectangular voltage of the comparator circuit.

3,680,411

AUTOMATIC SHIFT CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

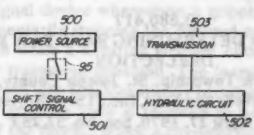
Shin Ito, 10, Toyotacho, and Seitoku Kubo, 8, Toyotacho, both of Toyota, Japan

Filed March 20, 1970, Ser. No. 21,351

Claims priority, application Japan, Jan. 4, 1969, 44/25030

Int. Cl. B60k *21/00*

U.S. Cl. 74—866 18 Claims



A shift signal control system having an engine torque responsive signal generator, a vehicle speed responsive signal generator, and a plurality of discriminating circuits generating an output signal when one of these two signals or the relation between these two signals satisfies a predetermined condition. At least one of the discriminating circuits is disconnectably connected with an OR circuit through a switch while the remaining discriminating circuits are directly connected with the OR circuit so that an output signal is delivered from the OR circuit for carrying out ratio changes in response to the application of at least one of the output signals from the discriminating circuits.

3,680,412

JOINT BREAKOUT MECHANISM

James R. Mayer, Dallas, and Joe D. Tipton, Garland, both of Tex., assignors to Gardner-Denver Company, Quincy, Ill.

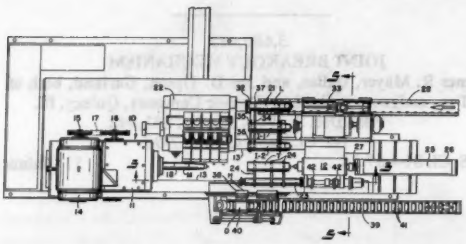
Filed Dec. 3, 1969, Ser. No. 881,842

Int. Cl. B25b *13/50, 17/00*

U.S. Cl. 81—57.34 11 Claims

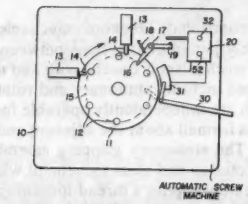
A remotely controlled breakout mechanism grips and loosens threadably joined connections between sections of a drill string. The mechanism is coaxial with and movable along the drill string and includes stationary and rotatable gripping assemblies which are independently operable for interengagement with splines formed about the adjacent ends of adjoining string sections. The stationary gripping assembly holds one section against rotation and axial movement while the rotatable gripping assembly applies a thread-loosening torque to the adjoining section. A pressure fluid power system for the breakout mechanism includes a control which prevents rotation of the rotatable gripping assembly unless the jaws thereof have been operated for positive interengagement with the splines on a section. Another control is responsive to engagement of the jaws of the stationary gripping assembly for limiting the joint retightening torque output of a fluid motor which normally rotates the drill string with full torque output during drilling operations. The breakout mechanism also serves as a centralizer for the drill string and as a support for temporarily suspending the drill string off the hole bottom. The number and shape of the splines on the end surfaces of the sections are preselected to provide substantial circumferential engagement with the jaws of the mechanism and to provide a sufficiently great number of opportunities for the gripping assemblies to interengage the splines so that a short-stroke power cylinder can be employed to operate the rotatable gripping assembly.

3,680,413
LATHE
Leonard L. Hiney, Austintown, Ohio, assignor to Wm. K. Stamets Company, Columbiana, Ohio
Filed Dec. 14, 1970, Ser. No. 97,621
Int. Cl. B23b *13/02*
U.S. Cl. 82—2.5 9 Claims



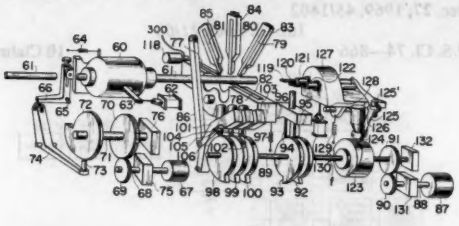
A lathe having a tailstock with a cradle for loading and unloading work swingably mounted thereon and movable axially from a transfer position to the machining position where the work is chucked in the lathe and the cradle swung out of the way. Work is fed to the cradle at the transfer position from a roller conveyor by horizontal beams which lift the work and move it transversely of the lathe to intermediate stations and finally into the cradle. After machining of the work the cradle carries it to the transfer position and swings upwardly so that the work rolls transversely to another position after which it is moved to a work station and the exit conveyor.

3,680,414
SHORT WORKPIECE CONTROL
Edward L. Ryswick, Rochester, N.Y., assignor to Varispace Industries, Inc., East Rochester, N.Y.
Filed Dec. 30, 1969, Ser. No. 889,284
Int. Cl. B23b *13/00*
U.S. Cl. 82—2.5 15 Claims



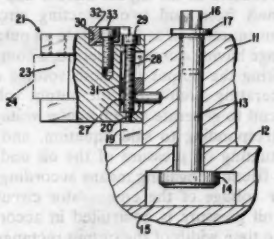
A workpiece measuring device is arranged to interrupt an automatic metal working machine if workpieces are short. The device includes a feeler movably mounted to extend into the path of relative motion of the machine's index mechanism for indexing tools or workpieces. An electric switch is operated by the feeler when workpieces of adequate length engage the feeler and move it during indexing. The switch is arranged in an RC circuit that interrupts the machine after lapse of an interval slightly exceeding the time for one cycle of the indexing mechanism, and actuation of the switch for each workpiece of adequate length disables the interruption to allow the machine to continue operation so long as no short or missing workpieces are encountered by the feeler.

3,680,415
AUTOMATIC LATHE
Hirotugu Takano, and Toshitsugu Inoue, both of Kyoto, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 19, 1970, Ser. No. 38,695
Claims priority, application Japan, May 26, 1969, 44/42356
Int. Cl. B23b *3/28*
U.S. Cl. 82—19 8 Claims



An automatic lathe wherein a plurality of cutters are provided in confronting relation to a rotating rod material, and the movement of the said rod material and the said cutters are controlled according to a working information stored in a tape or card, whereby a complete parts is obtained automatically according to the said working information.

3,680,416
TOOL POST HOLDER
Cornelis Van Dijk, 25 Nantrin Terrace, Milford, Conn.
Filed Aug. 13, 1970, Ser. No. 63,435
Int. Cl. B23b *29/10*
U.S. Cl. 82—36 8 Claims

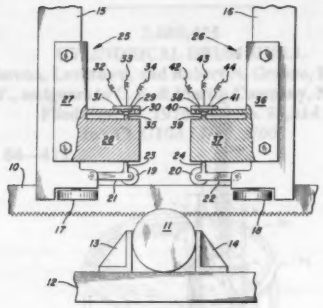


A tool post comprises a body upon which a tool holder is slideably mounted for vertical movement by means of a dovetail slide and groove and the body has a slit therein which opens into the slide groove. A bolt passes through the slit portion of the body which has its end threadedly received in a block which is laterally movable by means of an eccentric. A vertical slot in the tool holder slide receives a fixed pin, and there is an adjusting bolt passing through the slot with a traveling nut which is engageable with the fixed pin to permit vertical adjustment of the tool holder.

3,680,417
SENSOR FOR DETERMINING BAND SAW BLADE DEFLECTION
Jan R. Wells, Park Township, St. Joseph County, Mich., assignor to W. F. Wells and Sons, Inc., Three Rovers, Mich.
Filed April 27, 1970, Ser. No. 32,283
Int. Cl. B23d *53/00*
U.S. Cl. 83—74 3 Claims

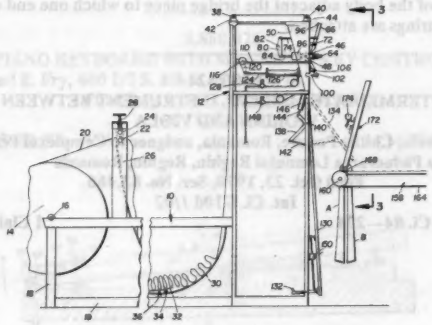
Blade deflection sensor comprises a deflectable cantilevered arm of a rigid member, mechanically coupled to a band

saw blade and adapted to bear against the base-emitter junc-



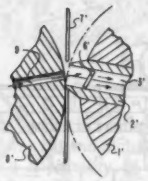
tion of a piezotransistor mounted on the rigid member in response to a deflection of the blade.

3,680,418
FABRIC SHEARING APPARATUS
John Franklin Phillips, Route 2, Box 255, Sand Springs, Okla.
Filed April 20, 1970, Ser. No. 29,810
Int. Cl. B65h *33/00*
U.S. Cl. 83—80 **13 Claims**



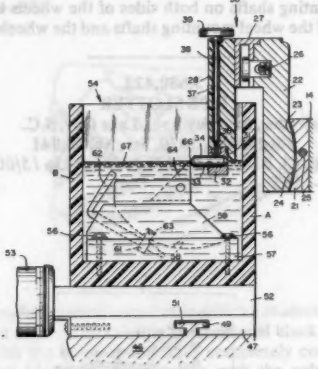
An apparatus for automatically cutting lengths from a travelling web of fabric and for storing cut lengths thereof and conveying the stored lengths of the fabric to the storage area. The web of fabric is drawn or fed from the storage roll and passed through the apparatus until the leading edge of the web activates a signal device whereupon a gripping shoe is actuated for momentarily stopping the forward movement of the travelling web while a shearing element cuts the fabric in a cross-wise or transverse direction. The length of fabric thus severed from the web is automatically transferred to a storage slat, and the gripping shoe is released to permit continued movement of the fabric. When a predetermined quantity of severed lengths of fabric have been stored or deposited on the storage slat, the slat is conveyed toward a storage area, and the next succeeding slat is moved into position for receiving a quantity of severed lengths of the fabric.

3,680,419
ROTARY PUNCH DEVICE WITH PUSH-PULL CHIP REMOVAL
Egbertus P. Stoop, Amsterdam, Netherlands, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 26, 1970, Ser. No. 83,815
Claims priority, application Netherlands, Feb. 19, 1970, 7002316
Int. Cl. B26d *7/06*
U.S. Cl. 83—98 **6 Claims**



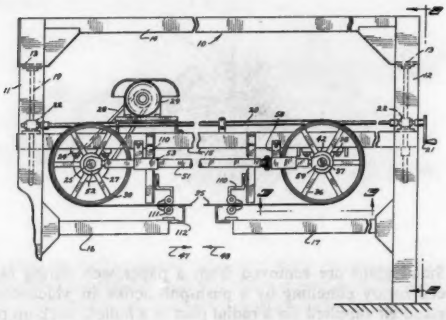
Small chips are removed from a paper web during high speed rotary punching by a push-pull action in which compressed air supplied via a radial port in a hollow back-up roll blows the cut chip into a hollow punch connected via a hollow shaft to a vacuum source for removing chips from the punch station.

3,680,420
CRYOGENIC MICROTOME APPARATUS
Josef Blum, Norwalk, Conn., assignor to Ivan Sorvall, Inc., Newtown, Conn.
Filed Oct. 22, 1970, Ser. No. 82,994
Int. Cl. B26d *7/08, 4/22*
U.S. Cl. 83—167 **21 Claims**



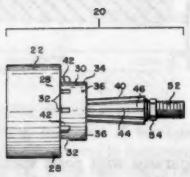
Microtome apparatus with parts specially formed and arranged for cutting thin and ultra thin tissue sections under cryogenic conditions. The microtome is provided with an insulated enclosure or container for the cryogenic fluid and a stationary, but adjustable, cutting knife. The swinging fulcrum arm of the microtome has at its outer end a U-shaped specimen holder so designed to enable the specimen holder assembly to straddle one wall of the container. Thus, the stationary knife edge is horizontally aligned with the fulcrum arm pivot point without need for a sealed container-wall fulcrum arm passageway.

3,680,421
BAND SAW APPARATUS
Joseph R. Conner; Thomas F. Shovlin, both of Minneapolis, and Jack D. Helm, Maple Plain, all of Minn., assignors to Bemis Company Inc., Minneapolis, Minn.
Filed July 10, 1970, Ser. No. 53,840
Int. Cl. B23d *55/10*; B27b *13/08*
U.S. Cl. 83—201.14 12 Claims



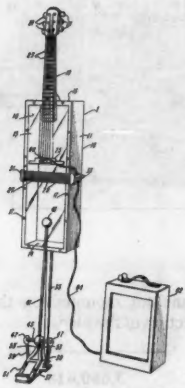
Band saw apparatus having a motor driven first blade mounting wheel, a second wheel, a band saw blade extended around said wheels, a plate slidably mounted on the frame mounting the second wheel for reciprocal longitudinal movement, adjustment driven screw shaft devices for varying the longitudinal position of the plate on the frame and adjustably maintaining the spacing of the end portion of the wheel mounting shafts on the opposite side of the wheels from the frame member on which the wheels are mounted, and a motor driven air operated slip clutch for driving the screw shafts to increase the spacing of the wheel mounting shafts as the blade expands during sawing and decrease the spacing after the sawing is discontinued. Bearing members are provided on both wheel mounting shafts on both sides of the wheels to prevent toeing in of the wheel mounting shafts and the wheels.

3,680,422
PIPE SLOTTER
Mario O. Salvador, Brantley Ave., Lake City, S.C.
Filed Oct. 7, 1970, Ser. No. 78,841
Int. Cl. B26f *1/14*; B23b *21/14*; B23p *15/00*
U.S. Cl. 83—183 12 Claims



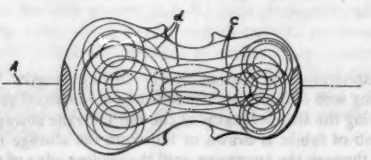
A tube slotting assembly where tubing is placed in the annular space between an outer internally grooved cylindrical die and an inner cylindrical punch holder having slots in which radially movable punches are supported for outward movement against the internal tube surface, movement of the punches being controlled by a punch forcing cone which is longitudinally movable within the cylindrical punch holder.

3,680,423
COMBINED DRUM-GUITAR MUSICAL INSTRUMENT
Max Lander, P.O. Box 3353, St. Petersburg, Fla.
Filed Nov. 17, 1970, Ser. No. 67,409
Int. Cl. G10d *15/00*, *1/08*, *13/02*
U.S. Cl. 84—170 3 Claims



The body of the instrument is of rectangular configuration and has front and rear walls formed of clear, rigid plastic material. A foot pedal connected with the foot piece on which the instrument stands, is adapted to move a drumstick so that the head thereof will strike either the front or the rear wall of the body. A snare piece is detachably mounted on the front wall of the body adjacent the bridge piece to which one end of the strings are attached.

3,680,424
INTERMEDIATE MUSICAL INSTRUMENT BETWEEN VIOLINA AND VIOLA
Ion Delu, Chitila Padure, Romania, assignor to Complexul Pentru Prelucrarea Lemnului Reghin, Reghin, Romania
Filed Oct. 23, 1970, Ser. No. 83,466
Int. Cl. G10d *1/02*
U.S. Cl. 84—274 1 Claim



A stringed instrument adapted to be played with a bow has a case formed by a front and rear sounding board interconnected by a frame and carrying a string-anchoring neck. Each board is formed with a plurality of similar and concentric endless grooves having a common axis of symmetry lying on the boards' longitudinal axes and groups of substantially circular concentric endless grooves centered on acoustic points. A

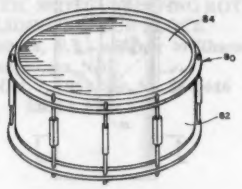
pair of resonance bars having notched edges are glued to the inside of the front sounding board, one of the bar being transverse to the longitudinal axis of the front sounding board and parallel to the transverse axis of symmetry and the other being oblique to the longitudinal axis.

3,680,425

CYLINDRICAL DRUM SHELL

John Morena, Levittown, and Robert N. Grauso, Bayside, both of N.Y., assignors to C. F. & Martin Company, Nazareth, Pa.

Filed Nov. 27, 1970, Ser. No. 93,314
Int. Cl. G10d *13/02, 3/00*
U.S. Cl. 84—411 **7 Claims**



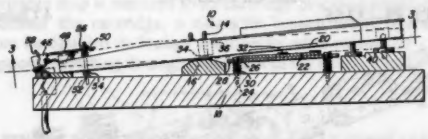
Improved snare, bass and Tom-Tom drums are provided by forming the shell thereof from glass fibers that are bonded together with a resinous material. The glass fibers may be continuous and helically wound over a mandrel or they may be short randomly chopped fibers that form a mat which is applied either to the exterior of a male mandrel or to the interior of a female mold. The method of this invention also contemplates wrapping a band about the resin bonded fibers in order to provide a smooth outer surface. Further, it is also contemplated to provide axially spaced, annular rings at the ends of the shells for providing structural rigidity.

3,680,426

PIANO KEYBOARD WITH MAGNETIC KEY CONTROL

Earl E. Fry, 400 1/2 S. 5th St., Oregon, Ill.

Filed July 2, 1971, Ser. No. 159,369
Int. Cl. G10c *3/12*
U.S. Cl. 84—433 **14 Claims**



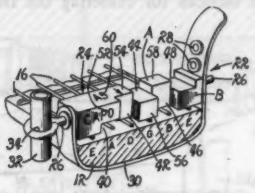
A magnetic piano keyboard assembly comprising a plurality of pivotally mounted piano keys each having a permanent magnet mounted on its bottom surface adjacent a corresponding stationary magnetic member which is adjustably fastened to the keyboard bed, each permanent magnet coacting with a corresponding stationary magnetic member to aid in the depression of the key, providing lighter touching pressure and faster repetitive action. One end of each key is biased in a downward direction by a leaf type balance spring or finger which is adjustable to increase or decrease the amount of tension to assure adequate key return forces and to balance the key, such that a desired amount of touch pressure may be set to meet the individual player's desires. The adjustment of the leaf springs may be overridden by way of a sustained pedal connection which may be actuated by the player to increase the leaf spring forces affecting key balance during actual playing.

3,680,427

DEVICE FOR TUNING STRINGED INSTRUMENTS

Pete P. Valentino, 6061 N. Wilson, Fresno, Calif.

Filed Oct. 16, 1970, Ser. No. 81,396
Int. Cl. G10g *7/02*; G10d *3/00*
U.S. Cl. 84—456 **8 Claims**



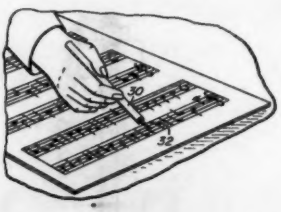
An improved device for use in tuning stringed instruments of a type having a fingerboard and including thereon transversely oriented frets and a plurality of substantially parallel strings traversing said frets. The device conforms to an elongated bar adapted to be mounted on a fingerboard and includes an integrated pitch pipe, a plurality of raised fretting surfaces and a plurality of reliefs paired with the fretting surface so that a first string can be tuned to the tone of the pitch pipe, with all other strings thereafter being tuned in sequence as the bar is rotated in a manner such that one string of a pair of adjacent strings is fretted for producing a selected tone while the other string of the pair remains unfretted for accommodating a tuning thereof. A particular feature of the invention resides in its unitary and simplistic configuration which includes paired fretting surfaces and reliefs as well as an integrally related pitch pipe.

3,680,428

COLOR CODED MUSICAL NOTATION

Ludwig E. Buckrucker, and Mary J. Buckrucker, both of 5901 Addison St., Chicago, Ill.

Filed Nov. 19, 1970, Ser. No. 91,103
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 **3 Claims**



A color coded musical notation in which a student will place color coded disks on an existing conventional black and white notation with the color coded disks completely covering the conventional black musical notation with the colored disks and the apparatus for applying the same being provided in kit form in order to enable the color coded disks to be placed on the sheet music by individuals.

3,680,429

SELF-GAUGING, INTERFERENCE FIT RIVET

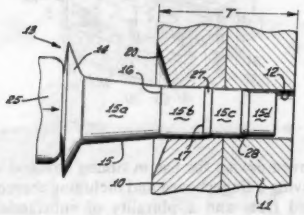
Franklin S. Briles, 6 Middle Ridge Lane, Rolling Hills, Calif.

Filed March 17, 1970, Ser. No. 20,220
Int. Cl. F16h *19/04*
U.S. Cl. 85—37 **3 Claims**

A self-gauging, interference fit rivet, comprises:
a. a head and a shank protruding therefrom,

b. the shank having, along its length in a direction away from the head, a sequence of progressively reduced diameter sections, the smallest section to fit freely within a work bore and the largest section to resist complete insertion of the rivet in the bore by interference engagement with the work surrounding the bore,

c. there being an elongated mid-section between said largest and smallest sections for centering the rivet in the bore



through slight interference therewith,

d. said shank largest section being capable of forced insertion relatively into the bore to enable closure of the head toward the work and to pre-stress the work around the bore, and

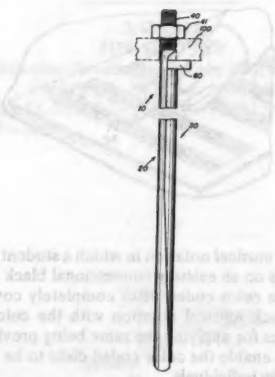
e. said smallest section of the rivet being sized to be upset for forming a retaining flange at the side of the work opposite the head.

3,680,430

ANCHOR BOLT

Robert E. Cannon, Hibbing, Minn., and LeRoy H. Frailing, Rochester, Mich., assignors to Cannon and Associates, Inc., Hibbing, Minn.

Filed May 6, 1970, Ser. No. 35,044
Int. Cl. F16b *13/04*
U.S. Cl. 85—79 **8 Claims**



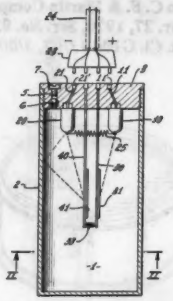
An improved anchor bolt in which composite bolt parts includes an active section in which the mating surfaces are inclined at an angle to the center line of the bolt to provide a gripping or frictional surface over the entire length of the active section of the bolt and an inactive section where the mating surfaces of the same are parallel to the center line of the bolt to provide for positioning of the active section in varying positions in a bore hole.

3,680,431

METHOD AND MEANS FOR GENERATING EXPLOSIVE FORCES

Josef Papp, San Pedro, Calif., assignor to Environetics, Inc., Gardena, Calif.

Filed Nov. 1, 1968, Ser. No. 772,653
Int. Cl. F41f
U.S. Cl. 89—7 **13 Claims**



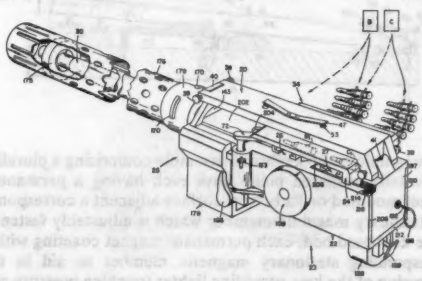
A method of generating explosive forces involving the triggering and utilization of potential energy of atoms and various forms of radiation and emanation; the provision of environmental means in which the reaction can be initiated by electrical means. The utilization of elements of relatively low atomic number, such as the noble gases, chlorine and other elements and their isotopes whose atoms do not have their outer quantum levels completely satisfied with orbital electrons, in the production of explosive reactions in which fission, spallation, transfer reactions and cascade effects appear to be utilized. The utilization of elements having the property of emitting electrons, alpha gamma and beta radiations, X-ray and ultraviolet emanations for the purpose of triggering the reactions.

3,680,432

MACHINE GUN HAVING DUAL FEEDING MEANS FOR SELECTIVELY FEEDING CARTRIDGES

John Gonsalves Rocha, Westfield, Mass., assignor to Maremont Corporation, Chicago, Ill.

Filed May 25, 1970, Ser. No. 40,168
Int. Cl. F41d *9/02*
U.S. Cl. 89—33 SF **4 Claims**



This disclosure relates to machine guns. Its features include: two feeding means mounted in tandem in a feed tray slideably mounted on the gun receiver for selectively feeding cartridges from two separate cartridge belts; receiver operating slide inertia control comprising energy absorption means responsive to the rate of movement of the operating slide effective to compensate for different cartridge propellant characteristics by absorbing increasing amounts of slide energy at increasing

slide speeds; quick release mounting for the receiver and barrel including a retaining element, a receiver element removably supported in the retaining element and a barrel element removably supported both in the receiver element and the retaining element; a removable receiver back plate with locking means effective to prevent removal of the back plate when the operating slide springs are dangerously compressed in cocked position; an accelerator in contact with both the barrel actuator and the operating slide for immediate operation of the slide upon firing; a cable secured to the operating slide provided with a handle for cocking the operating slide; and a novel buffer for cushioning the movement of the barrel into firing position.

3,680,433

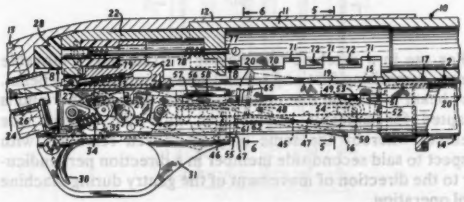
SEMI-AUTOMATIC SHOTGUN HAVING ROTARY AND SLIDING BREECH BLOCK

James Tollinger, Ithaca, N.Y., assignor to Ithaca Gun Company Incorporated, Ithaca, N.Y.

Filed Oct. 7, 1969, Ser. No. 864,446

Int. Cl. F41c *5/02*

U.S. Cl. 89—185 **9 Claims**



In the particular embodiment of the invention described herein, a semi-automatic shotgun is provided with a piston which is independently movable in a cylinder to drive the action of the gun rearwardly, a single cartridge stop normally retaining cartridges in a magazine and released by rearward motion of the action, and a carrier latch which slides rearwardly to release the carrier when the cartridge being chambered is fully disposed on the carrier, thereby permitting that cartridge to retain other cartridges in the magazine until the cartridge stop is restored to its cartridge blocking position. To chamber the cartridge, a rotatable breech block is rotated from its open to its locked position by axial motion of a bolt support extending through a cam slot in the bolt.

3,680,434

FIRING RATE REGULATOR FOR A GAS-OPERATED FIREARM

Ernst Muhlemann, Zurich, Switzerland, assignor to Werkzeugmaschinenfabrik Derlikon-Buhrle AG, Zurich, Switzerland

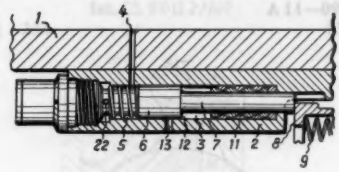
Filed July 8, 1970, Ser. No. 53,256

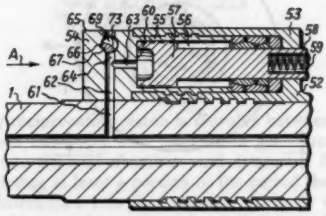
Claims priority, application Switzerland, July 11, 1969, 10616/69

Int. Cl. F41d *5/08*

U.S. Cl. 89—193 **5 Claims**

A firing rate regulator for an automatic firearm having a breech mechanism operated by gas pressure. A breech casing has a gas channel and a throttling element is responsive to a temperature change for regulating the gas pressure by varying the cross sectional area of gas flow through the gas channel. Members made of materials having different coefficients of thermal expansion move the throttling member. The throttling element may be a piston with an annular groove movable in the casing and biased on one side by a spring and on the other side by a liquid such as mercury whereby the position of a flank of the groove determines the cross sectional area of the gas channel or a rotatable pin projecting into the gas channel





with a bimetal spring for rotating the pin to vary the cross sectional area of the gas channel.

3,680,435

ADAPTERS FOR MILLING-CUTTERS AND SIMILAR TOOLS

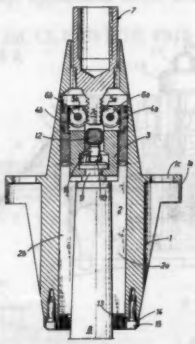
Henri Deplante, Paris, France, assignor to Avions Marcel Dassault, Vaucresson, France

Filed Dec. 29, 1970, Ser. No. 102,455

Claims priority, application France, Dec. 30, 1969, 6945421

Int. Cl. B23c *9/00*

U.S. Cl. 90—11 D **6 Claims**



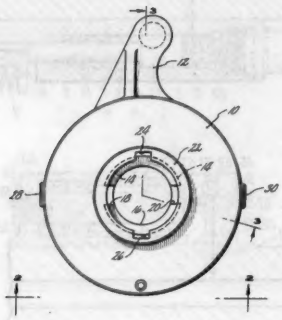
An adapter for tools of the milling-cutter type having a shank portion, comprising a shank-receiving hollow case containing a removable part of adjustable length and a separate stop member against which the shank is fetched into abutment, and intermediate drive means having gearwheels and dual racks for automatically clamping and accurately positioning the tool responsively to a pulling force exerted at the end opposite the tool shank receiving orifice.

3,680,436

TOOL CHANGER CLAMP

George H. Marsland, Bristol, Conn., assignor to Pratt & Whitney Inc., West Hartford, Conn.

Filed Oct. 12, 1970, Ser. No. 80,035
Int. Cl. B23c *1/00*
U.S. Cl. 90—11 A 11 Claims



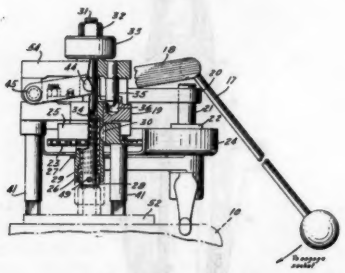
A Tool Changer Clamp has a rotatable tool spindle having an axially extending socket within its tool mounting end to receive a tool holder. The outer surface of the spindle is threaded to receive a collar which is adapted to retain the tool holder within the spindle. A serrated locking plate is secured to the outer surface of the spindle in such a manner that it may axially slide over the outer surface. Springs urge the locking plate into engagement with mating serrations on the collar to prevent rotation of the collar with respect to the spindle when the clamp is subjected to vibrations. A piston is adapted to disengage the locking plate from the collar to permit manual or automatic tool changing.

3,680,437

MILLING MACHINE DRAW BAR DEVICE

Mark C. Cravens, Jr., 18852 Plummer Ave., Northridge, Calif.

Filed July 15, 1970, Ser. No. 55,194
Int. Cl. B23b *47/00*; B23c *9/00*
U.S. Cl. 90—11 D 3 Claims



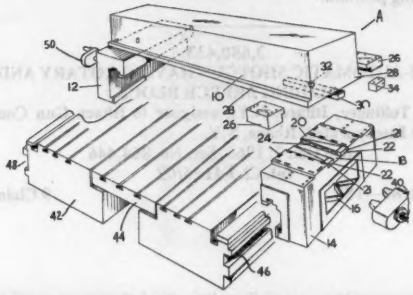
There is described in the specification a manually operated drawbar device for changing the collet or cutting tool on a milling head of a milling machine. The drawbar device is lowered to engage the drawbar head with a wrench socket. The socket is rotated in either direction with a hand crank and chain drive to loosen or secure a collet or cutting tool in the milling head spindle. After loosening the drawbar head and raising the wrench socket from engagement with the drawbar head, the drawbar head is automatically impacted to ensure that the collet or tool releases readily from the spindle.

3,680,438

MACHINE TOOL GANTRIES

Richard Samuel Jonathan Good, Mountsorrel, and Barry Charles Harvey, Kirby Muxloe, both of England, assignors to Marwin Machine Tools Limited, Anstey, Leicestershire, England

Filed May 28, 1970, Ser. No. 41,424
Claims priority, application Great Britain, June 24, 1969, 31,725/69
Int. Cl. B23c *1/00*
U.S. Cl. 90—11 R 7 Claims



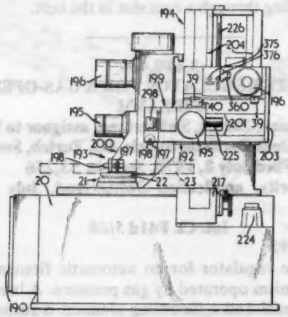
For use in a machine tool having a fixed bed, a movable gantry comprising first and second side members and a beam. The beam is fixed at one end to said first side member and is adapted for slideable engagement with said second side member whereby the same may be moved relatively with respect to said second side member in a direction perpendicular to the direction of movement of the gantry during machine tool operation.

3,680,439

MACHINE TOOL HAVING ROTARY AND INDEXIBLE WORK TABLE

James Kenneth Lancaster, and David William Yates, both of Coventry, England, assignors to Caludon Engineering Company Limited, Warwickshire, England

Filed June 1, 1970, Ser. No. 42,085
Claims priority, application Great Britain, June 6, 1969, 28,649/69; Nov. 15, 1969, 56,035/69
Int. Cl. B23c *1/14*; B23q *17/18*
U.S. Cl. 90—15.1 17 Claims



A machine took, primarily for producing slots in a workpiece, has a rotatable work-table for supporting the workpiece, a cutter head on which a rotatable cutting tool is carried and a support frame for the cutter head. The cutter head is movable relative to the support frame and work-table drive

means rotates the work-table in a series of accurately predetermined increments or continuously. The increments of movement of the work-table are variable in magnitude and the cutting tool makes a cut in the work-table between each incremental movement. Two cutter heads are normally provided both of which are carried on a common support frame.

3,680,440

METHOD OF MANUFACTURING STATOR CORE FRAME OF ELECTRICAL MACHINE, FOR EXAMPLE, TURBOGENERATOR, AND DEVICE FOR MACHINING SAID FRAME FOR REALIZATION OF SAID METHOD

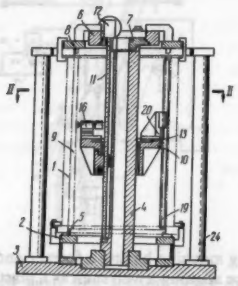
Moisei Abramovich Goldshtein, ulitsa Tuklachevskogo 11, kv. 27, and Arkady Moiseevich Goldshtein, ulitsa Tankopia, 29/I, kv. 12, both of Kharkov, U.S.S.R.

Filed Nov. 19, 1969, Ser. No. 878,051

Claims priority, application U.S.S.R., Nov. 22, 1968, 1284469; Nov. 22, 1968, 1284470

Int. Cl. B23p *23/00*

U.S. Cl. 90—15 **4 Claims**



The manufacture of the stator core frame of a large electrical machine and more particularly turbogenerators in which the stator core frame is set vertically, fastened in such position and then slotted by a machining operation, for example by milling. The stacking ribs are fitted into the slots, after which the frame is unfastened and set horizontally. The stacking ribs are welded into the slots, and the frame is again set vertically and fastened. At least one seating surface of the stacking ribs is finally machined, preferably by milling.

3,680,441

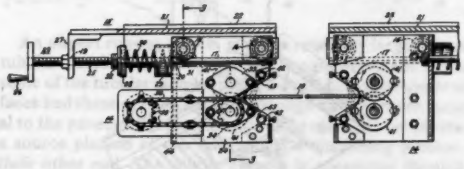
STRIP EDGE SHAPING APPARATUS

Calvin E. Parker, Sr., Walnut Creek, Calif., assignor to Bethlehem Steel Corporation

Filed May 11, 1970, Ser. No. 36,328

Int. Cl. B23d *1/00*; B26d *3/02*

U.S. Cl. 90—24 F **2 Claims**



Apparatus for shaping the edges of advancing sheet or strip in which cutting discs are mounted to cut a light bevel from the upper and lower edges of the strip and wherein provision is made to apply fluid under pressure to aid in the removal of the scrap material from the strip.

3,680,442

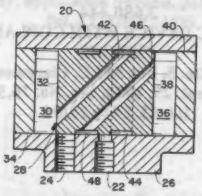
GAS PRESSURE DRIVEN VIBRATORY CYLINDER CONSTRUCTION

Donald C. Kanning, Long Beach, Calif., assignor to Ben C. Klingensmith, Compton, Calif.

Filed Nov. 5, 1970, Ser. No. 87,187

Int. Cl. F01l *21/02*

U.S. Cl. 91—234 **13 Claims**



A freely reciprocating piston is movable between opposite cylinder end chambers with pressurized gas introduced alternately into the end chambers and exhausted from each chamber during at least a portion of the period that it is not being so introduced into that chamber so as to oppositely drive the piston continuously reciprocally. A single exhaust port in the cylinder side wall is located adjacent a first of the cylinder end chambers directly open to that end chamber during part of the piston movement and overlapped by the piston disrupting such direct opening during the remainder of piston movement. A single gas inlet port at the cylinder side wall is spaced between the cylinder end chambers communicating through a first gas channel formed through the piston with the first cylinder end chamber during a part of the time the piston overlaps the exhaust port and communicating through a piston second gas channel with a second of the cylinder end chambers during a part of the time the exhaust port is directly open to the first cylinder end chamber.

3,680,443

STEERING MECHANISM FOR MOTOR VEHICLES

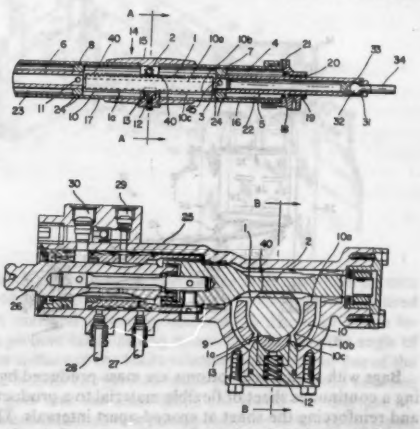
Leslie Richard Jenvey, Reading, England, assignor to Adwest Engineering Limited

Filed Nov. 17, 1969, Ser. No. 877,219

Claims priority, application Great Britain, Nov. 15, 1968, 54,467/68

Int. Cl. F15b *9/10*; F01b *9/00*

U.S. Cl. 91—375 A **9 Claims**



A rack and pinion steering mechanism for motor vehicles is provided in which the machining of the rack is facilitated and

the effective length of the unit is reduced with a reduction in the distance between the centers of the two ball joints. The unit comprises a carrier, a toothed rack pivotally mounted by one of its ends on the carrier, which is slideable within the casing a pinion carried by the casing engages the toothed rack; and a resilient device urges the toothed rack into mesh with the pinion.

3,680,444

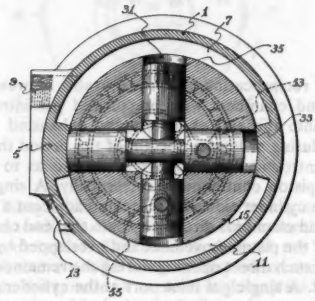
ROTARY KINETIC DEVICE WITH COPLANER TANDEM PISTONS

Leonard R. Casey, Rte. 5, Box 533 C, Claremore, Okla.

Filed Sept. 29, 1970, Ser. No. 76,547

Int. Cl. F04b *13/06*

U.S. Cl. 91—493 **1 Claim**



A rotary kinetic fluid device such as a pump, compressor or motor has a rotor with angularly related tandem piston assemblies therein whose axes are all disposed in a common plane and that are caused to reciprocate in the rotor by securement to bearing races that are eccentric to the rotor and concentric to each other. Diametrically opposed pistons are interconnected in tandem by connections that laterally overlie each other in the intersecting piston bores.

3,680,445

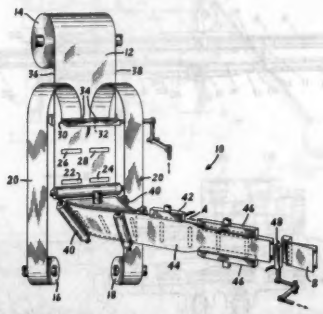
METHOD AND APPARATUS FOR MANUFACTURING SHOPPING BAG

Curt Charles Pearl, and Sidney Poland, both of Baltimore, Md., assignors to APL Corporation, Brooklyn, N.Y.

Filed June 5, 1970, Ser. No. 43,681

Int. Cl. B31b *49/04*

U.S. Cl. 93—35 R **7 Claims**



Bags with reinforced bottoms are mass-produced by supplying a continuous sheet of flexible material to a production line and reinforcing the sheet at spaced-apart intervals. The sheet is folded widthwise to bring opposite edges thereof together, and the edges are joined to each other to form a tube-like structure. Successive segments of the tube-like structure are severed from the sheet along lines adjacent to successive reinforcements, and the severed structures are closed off adjacent to the respective reinforcements.

3,680,446

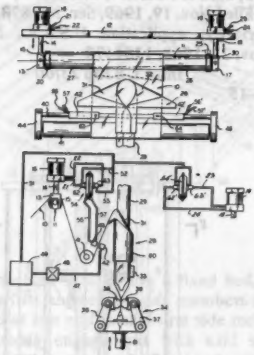
APPARATUS FOR WEB EDGE ALIGNMENT

Robert C. James; Walter H. Vogel, and Richard D. Sorenson, all of Sheboygan, Wis., assignors to Hayssen Manufacturing Company, Sheboygan, Wis.

Division of Ser. No. 757,600, Sept. 5, 1968, Pat. No. 3,592,372. This application April 9, 1970, Ser. No. 26,935

Int. Cl. B31b *1/10, 1/40, 3/00*

U.S. Cl. 93—82 **1 Claim**



A packaging machine having a former and a web edge aligning system for aligning a web such as a plastic film which is to be formed into containers, is disclosed, A shiftable web guide roller has adjustable cylinders mounted at its opposite ends for independently adjusting the ends of the roller so as to move the web as it passes over the roller. Fluid sensors are mounted on each side of the web after it passes over the roller and detect when the web edges are properly aligned. If the web is misaligned, the sensors control valves to operate the cylinders so that the film is again centered and aligned.

3,680,447

BATCHING OF ARTICLES

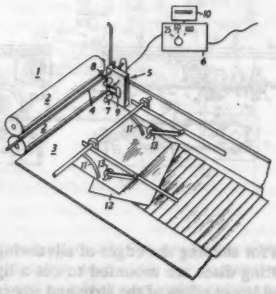
Edward William Hargreaves, Totton, England, assignor to Special Engineering Development Limited, Totton, Hants, England

Filed Jan. 14, 1971, Ser. No. 106,391

Claims priority, application Great Britain, Jan. 14, 1970, 188,170/70; April 7, 1970, 16,499/70

Int. Cl. B65h *33/00*

U.S. Cl. 93—93 K **16 Claims**



Apparatus for batching articles sequentially ejected from rollers at the output of a folding machine or otherwise ad-

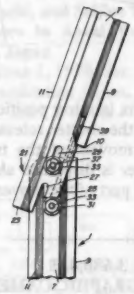
vanced along a predetermined path. The trailing edge of each article passing the apparatus is detected by a photosensitive device or by a similar device which imposes no retarding forces on the article. Upon detection of an article a detection signal is applied to a counter, which provides an output signal after receiving a predetermined number of detection signals. The output signal is applied to a batching mechanism, which operates to render the preceding predetermined number of articles visually identifiable from succeeding articles in the sequence.

3,680,448

LAY-DOWN HIGHWAY DELINEATOR POST

Robert G. Ballingall, Box 511, Wakefield, Mich., and Niles G. Sanders, Rte. 1, Box 296, Bessemer, Mich.

Filed Sept. 21, 1970, Ser. No. 73,723
Int. Cl. E01c *23/16*
U.S. Cl. 94—1.5 **3 Claims**



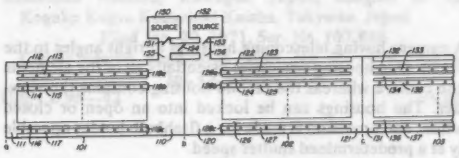
A two sectioned post, one section being driven into the ground and the other section being above ground, the two sections being hingedly connected, the hinge being so constructed that the upper section may be pivoted in only one direction into substantially horizontal, or "lay-down" position.

3,680,449

AIRPORT RUNWAY SYSTEM

Kenneth E. Guritz, 570 Emerald Harbor Drive, Sarasota, Fla., and John W. Magill, 643 S. Oak Knoll Ave., Pasadena, Calif., assignors to said Magill, by said Guritz

Filed March 19, 1970, Ser. No. 21,132
Int. Cl. E01c *9/00*; B64f *1/00*
U.S. Cl. 94—4 **5 Claims**



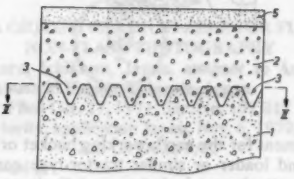
An airport runway system wherein relatively large diameter tubular members are integrally cast in rigid pavement. At least some of the tubular members have openings in their upper surfaces and these openings extend through the pavement material to the pavement surface. The tubular members terminate in a source plenum at one end and in a combining plenum at their other end. The source plenum is connected through a valving system to a high capacity adjustable source of air, heat and vacuum. Valving within the source plenum associated with individual ones of the tubular members serves to control the utilization of the tubular members. Additionally, there are provisions for utilizing certain of the tubular members for the installation of services such as power along runway and taxiway pavements.

3,680,450

CEMENT CONCRETE STRUCTURE WITH ANCHORING MEANS FOR PREVENTING THE OCCURENCE OF LARGE CONTRACTION CRACKS AND A METHOD FOR FORMING CEMENT CONCRETE STRUCTURE

Gunnar Olsson, 16, Vibblabyvagen, Jakobsberg, Sweden

Filed July 2, 1970, Ser. No. 51,794
Claims priority, application Sweden, July 4, 1969, 9509/69
Int. Cl. E01c *21/00*
U.S. Cl. 94—22 **2 Claims**



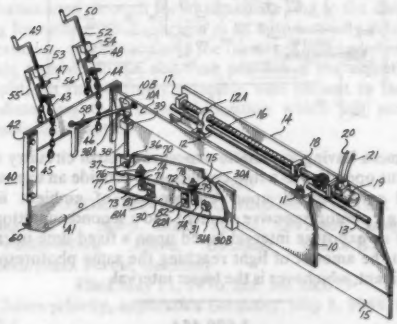
A slab-shaped cement concrete body resting under friction on a base, primarily the base course of a road or runway, is formed with anchoring means firmly connected with the body and projecting into the base to produce a great plurality of fine fissure closely adjacent one another instead of fewer and larger contraction cracks due to shrinkage stresses in the body when the cement concrete hardens. The anchoring means projecting into the base can be produced in several ways in connection with the moulding of the cement concrete body so as to become firmly connected with said body.

3,680,451

ROADWAY SLOPING ATTACHMENT FOR ASPHALT PAVING MACHINE

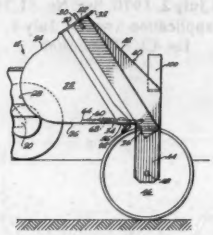
Ralph D. Birtchet, Galvin, Wash., assignor to Schneider-Simpson, Inc., Tacoma, Wash.

Filed June 15, 1970, Ser. No. 46,239
Int. Cl. E01c *19/22*
U.S. Cl. 94—45 **7 Claims**



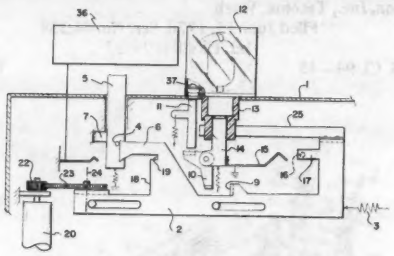
An attachment for an asphalt paving machine which permits the machine to slope the outer edge of a roadway to a desired angle. A material spreading assembly in disclosed which includes a pivoted blade having means for adjusting the angle of the lower surface of the blade relative to the bottom line of the strike-off board. The pivoted blade portion is located between the end gate and the main blade (or board) so that the assembly when attached to a paving machine serves to lay down an angled shoulder to the roadway as a part of the continuous surface laying operation.

3,680,452
DITCH ROLLER ATTACHMENT FOR EARTH LOADING MACHINE
Joe T. Mangum, 19725 N.E. 10 Ave., Miami, Fla.
Filed June 29, 1970, Ser. No. 50,708
Int. Cl. E01c *19/26*
U.S. Cl. 94—50 R 10 Claims



An attachment for the earth-working bucket or scoop part of a front-end loader or similar tractor-type earth-working vehicle. The attachment includes a relatively narrow earth-packing roller of a width permitting the roller to be received in a narrow trench or ditch, and for use in packing loose layers of earth in refilling or backfilling the ditch, as for example, in the procedure of laying a string of pipe in a ditch. The roller of the attachment is subjacently centrally supported on the bucket or scoop part of the loader machine — in using the attachment, the machine straddles the ditch and is piloted back and forth along the ditch in rolling and compacting the ditch floor.

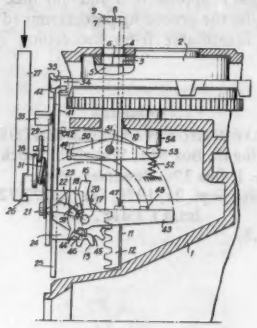
3,680,453
PHOTOGRAPHIC APPARATUS
Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed March 30, 1970, Ser. No. 23,642
Int. Cl. G03b *7/08*, *15/035*
U.S. Cl. 95—10 CT 4 Claims



A camera having automatic exposure control circuitry and apparatus operative in a first condition to provide an exposure interval solely based upon the amount of ambient light reaching a photoresponsive element and a second condition to provide an exposure interval based upon a fixed time interval or upon the amount of light reaching the same photoresponsive element, whichever is the lesser interval.

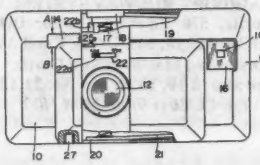
3,680,454
CAMERAS WITH MECHANICALLY IGNITED FLASHCUBES
Karl-Heinz Lange, Bunde, Germany, assignor to Balda-Werke, Bunde (Westf), Germany
Filed April 28, 1971, Ser. No. 138,026
Claims priority, application Germany, May 4, 1970, P 20 21 748.5
Int. Cl. G03b *15/04*
U.S. Cl. 95—11 L 10 Claims

A camera which mechanically ignites lamps of flashcubes. An ignition plunger of the camera is supported for movement from a rest position to an igniting position, and a transmission from the shutter-release structure acts on the plunger to displace the latter from its rest position toward its ignition position. This transmission has a non-linear characteristic according to which it will displace the ignition plunger from its rest



position rapidly toward its ignition position during an initial part of the movement of the shutter release means while during a final part of this movement the transmission rate is slower so that the plunger is displaced almost to its ignition position during the initial part of the movement of the shutter-release structure.

3,680,455
PHOTOGRAPHIC CAMERA
Helmut Meinunger, Radevormwald, Germany, assignor to Kurbi & Niggeloh, Radevormwald, Germany
Filed June 5, 1970, Ser. No. 43,766
Claims priority, application Germany, June 6, 1969, P 19 28 785.5
Int. Cl. G03b *19/00*
U.S. Cl. 95—11 7 Claims

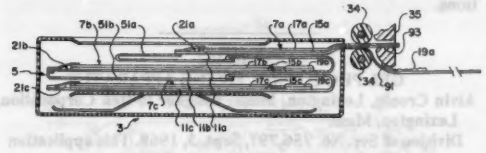


A camera having telescoping housings at right angles to the lens axis. One housing comprises essentially all of the elements of the camera whereas the second housing contains the viewfinder. The housings can be locked into an open or closed position, and provision is made for a flashbulb holder operable only at a predetermined shutter speed.

3,680,456
PHOTOGRAPHIC FILM ASSEMBLAGE
Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 2, 1970, Ser. No. 77,485
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 8 Claims

An assemblage of self-processing photographic film units each including pre-registered photosensitive and process elements strippably mounted on a carrier sheet, with a cooperating pod (supply container for fluid processing composition) and trap (collector for excess fluid processing composition) permanently secured to the carrier sheet. The film units are in-

terconnected to form the assemblage by leaders extending from the leading end of one unit to the trailing end of a next



preceding unit. The leaders are strippably attached to the next preceding unit for automatic threading as the next preceding unit is withdrawn from the assemblage.

3,680,457

CAMERA HAVING A PRELIMINARY FLASH ILLUMINATION FOR EXPOSURE DETERMINATION

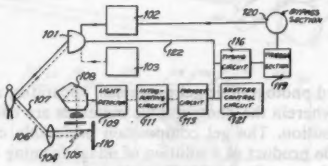
Naoyuki Uno, Oi-Machi, and Seijiro Tokutomi, Fujisawa, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed June 1, 1970, Ser. No. 42,387

Claims priority, application Japan, June 6, 1969, 44/44811

Int. Cl. G03b *19/12*

U.S. Cl. 95—42 **10 Claims**



A camera for controlling exposure in accordance with the light intensity of a preliminary flash. This light from the preliminary flash first passes through the objective of the camera and then is received by a light-detecting unit for measuring the light intensity. Information measured by the latter unit is used for controlling the exposure, so that the latter control is achieved with light which has already passed through the camera objective.

3,680,458

SPRING-ACTUATED MECHANISM PARTICULARLY FOR SINGLE-LENS REFLEX CAMERAS

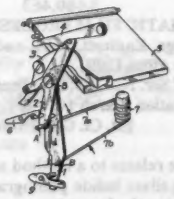
Katsuhiko Nomura, Kawagoe, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Jan. 20, 1971, Ser. No. 107,886

Claims priority, application Japan, Jan. 26, 1970, 45/6265

Int. Cl. G03b *19/12*

U.S. Cl. 95—42 **5 Claims**



A spring-actuated mechanism particularly adapted for use in a single-lens reflex camera for actuating a tiltable reflector and diaphragm lever thereof. The mechanism includes a lever assembly supported for swinging movement about a given axis in a plane normal to the latter axis. A single spring, such as a coil spring, has a pair of elongated springy portions, which may form elongated free end portions of the coil spring respectively acting on the lever assembly to urge the latter in opposite directions about the above axis. One of the springy portions of the single spring is situated at a greater distance from the axis than the other, so that the lever assembly will be urged to turn about the axis by that one of the springy portions which is at the greater distance from said axis and with a moment the magnitude of which is determined by the difference in the distances between said springy portions from the axis about which the lever assembly turns.

3,680,459

CAMERA OBJECTIVE ADJUSTABLE FOR FLASH AND NON-FLASH PHOTOGRAPHY

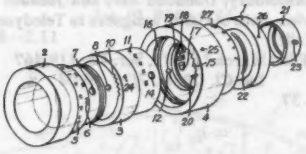
Zenichi Okura, Ichikawa, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Oct. 27, 1971, Ser. No. 192,817

Claims priority, application Japan, Nov. 6, 1970, 45/110787

Int. Cl. G03b *9/02*

U.S. Cl. 95—64 R **7 Claims**



A camera objective which may be adjusted so that in one position it is adapted for use with flash illumination and in another position it is adapted for operation without flash illumination. The objective has a focus ring, a diaphragm ring, and an intermediate ring situated therebetween. The intermediate ring is adjustable angularly with respect to the focus ring in accordance with a selected film speed while the diaphragm ring is adjustable angularly with respect to the intermediate ring in accordance with a selected flash guide number, and when the objective is used during flash photography rotary movement of the focus ring to focus the objective is transmitted through the intermediate ring to the diaphragm ring for setting the diaphragm at an automatically determined aperture in accordance with the factors of film speed and flash guide number. In the non-flash position of the objective, the diaphragm ring is freely rotatable with respect to the intermediate ring to a selected position which will provide a preselected aperture.

3,680,460

MOTOR DRIVER DIAPHRAGM SHUTTER

Franz W. R. Starp, Black Forest, Germany, assignor to Prontor-Werk Alfred Gauthier G.m.b.H., Calmbach/Black Forest, Germany

Filed May 11, 1970, Ser. No. 36,079

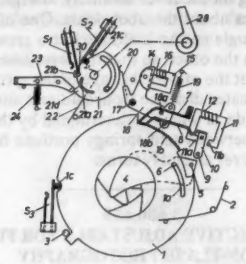
Claims priority, application Germany, May 9, 1969, P 19 23 687.4

Int. Cl. G03b *7/08, 9/24*

U.S. Cl. 95—53 EA **8 Claims**

A photographic camera is provided with a shutter blade system that simultaneously serves to set the shutter opening. The shutter blade system is movable out of the closed position by means of a setter in opposition to the force of a return spring. A motorized drive operates to open the shutter blade system and is operatively connectable to the setter so as to periodically switch the setter ahead. An electronic control device is operatively connected to the motorized drive. The control device, relative to the time of the start of the motor

drive, provides a switch impulse to an electro-mechanical mechanism which brings about a separation of the connection



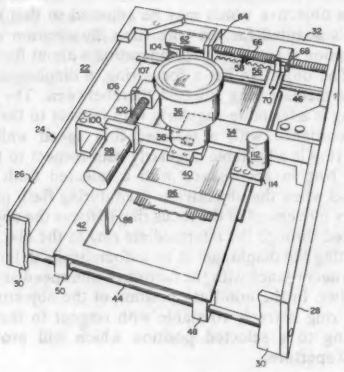
between the motorized drive and the setter according to a preselected or light-dependent determined time interval ascertained by a light-sensitive element.

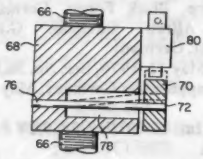
3,680,461

STEP-AND-REPEAT CAMERA HAVING AN IMPROVED FILM INDEXING MEANS

Maurice G. Amesbury, Diamond Bar, and Jacobus Van Vonderen, Covina, both of Calif., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed March 1, 1971, Ser. No. 119,467
Int. Cl. G03b *17/30, 19/04*
U.S. Cl. 95—37 14 Claims





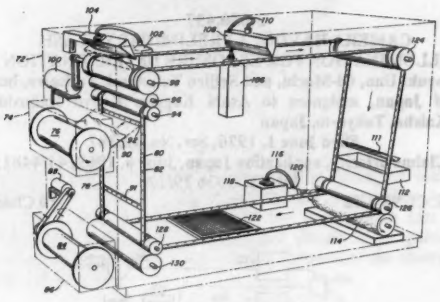
A step-and-repeat camera is disclosed which includes a film support frame for supporting film in a focal plane and a suitable lens for focusing an image to be photographed onto an exposure frame in the focal plane. A drive means including a resilient member is provided for moving the film support frame laterally relative to the lens and an indexing means is provided for securing the film support frame in a plurality of discrete lateral positions relative to the lens. Control means are provided which are responsive to deflections in the resilient member to deenergize the device means whenever the film support frame is in one of the discrete lateral positions.

3,680,462

GEL PHOTO PROCESSING APPARATUS

Alvin Cronig, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.

Division of Ser. No. 756,797, Sept. 3, 1968. This application Dec. 10, 1970, Ser. No. 96,709
Int. Cl. G03d *3/00*
U.S. Cl. 95—89 R 5 Claims



Improved photographic gel processes, apparatus, and compositions wherein the photographic materials are carried in a gel composition. The gel composition preferably comprises the reaction product of a solution of image forming materials and a gel former. Preferably the gel composition structure is heat-reversible and flexible. In a preferred method of this invention, a photosensitive copy medium is exposed and contacted with a gel composition comprising a reaction product of a solution of image forming materials and a gel former. The gel composition is allowed to remain in contact with photosensitive material for a sufficient time to process the exposed photosensitive material. The gel composition is cooled during the processing in order to form a layer which is strippable from the photosensitive material. In one embodiment of this invention, the gel composition is in the liquid or viscous state when it is contacted with the photo sensitive layer. The gel composition also may be in the form of a tape, gel roller, or the like when it is brought into contact with the photosensitive layer. Another preferred embodiment of this invention is where the gel composition is heat reversible and therefore, can be heated after use to convert to a liquid or viscous state and can then be reused in the system which requires a liquid or viscous gel composition for the starting material. A gel composition comprising a solution of metal ions or physical developer is an especially preferred system.

3,680,463

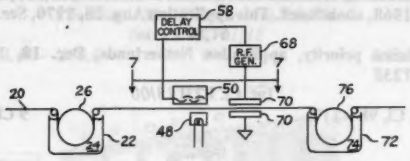
AUTOMATIC FILM PROCESSING DEVICE

Curtis C. Attridge, Endicott, N.Y., and Donald S. Ross, 1638 Oak Ave., Los Altos, Calif.

Continuation of Ser. No. 285,421, June 4, 1963, abandoned. This application March 10, 1967, Ser. No. 638,163
Int. Cl. G03d *3/06*
U.S. Cl. 95—89 12 Claims

This disclosure relates to a method and apparatus for selectively processing silver halide photographic film or the like by partially developing the latent image on the film in a standard developing solution, scanning the film with infrared radiation, sensing the density of discrete areas of the film by sensing the amount of infrared radiation reflected or transmitted through the partially exposed film by utilizing a photoelectric sensing

device, and automatically controlling the temperature of processing of discrete areas of the film in response to signals



developed by the photoelectric sensing device and thereafter finishing the developing process in a conventional developing bath.

3,680,464

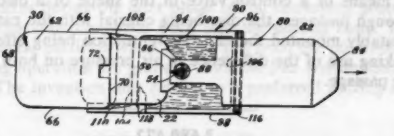
SINGLE USE FILM DEVELOPER AND FILM/DEVELOPER PACKAGE COUPLING MEANS THEREFOR

James F. G. Bowlby, 124 Demarest Road, Bloomingdale, N.J.

Filed Oct. 5, 1970, Ser. No. 77,779

Int. Cl. G03d *3/00*

U.S. Cl. 95—89 R **13 Claims**



Improved means for coupling a length of film to a pliable developer package are disclosed. A rigid tooth that is integral with the film releasably engages an aperture in a flexible tab that is integral with the developer package. The tooth and aperture are sized so as to be readily uncoupled after the film is accurately located in the developer chamber.

3,680,465

SINGLE USE FILM DEVELOPER AND IMPROVED WIPER MEANS THEREFOR

James F. G. Bowlby, 124 Demarest Road, Bloomingdale, N.J.

Filed Oct. 5, 1970, Ser. No. 77,781

Int. Cl. G03d *3/00*

U.S. Cl. 95—89 R **12 Claims**

Laterally offset resilient members that are in closely spaced opposition to each other provide a squeegee type wiping action to remove excess fluid from a strip of film moving therebetween.

3,680,466

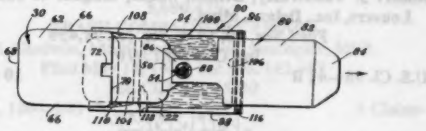
SINGLE USE FILM DEVELOPER AND AUTOMATIC, RUPTURABLE DEVELOPER PACKAGE THEREFOR

James F. G. Bowlby, 124 Demarest Road, Bloomingdale, N.J.

Filed Oct. 5, 1970, Ser. No. 77,780

Int. Cl. G03d *1/02*

U.S. Cl. 95—90 **18 Claims**



The developer package is provided with rupturable means that permit the developer fluid to be discharged automatically into a rigid container as the coupled film and developer packages are drawn therethrough.

3,680,467

CLIMATE CONDITIONER FOR MOTOR VEHICLES

Walter B. Brock, 6012 Loomis Road, Victor, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,933

Int. Cl. B60h *1/24*

U.S. Cl. 98—2.11 **9 Claims**

A refillable tank of compressed air is carried in the trunk of an automobile and is connected with an air turbine that is mounted on the ceiling of the vehicle. The turbine rotor is attached to a fan. A pair of opposed nozzles fixed in the turbine housing direct jets of compressed air against angularly spaced vanes carried by the rotor. A time delay ON-OFF switch controls the flow of the compressed air to the jets. The compressed air cools rapidly upon being discharged from the nozzles, and drives the rotor and fan assembly, causing cool air to be blown into the car. A retractable shade is provided for the vehicle windshield, and the remaining windows are tinted to minimize solar heat in the car.

3,680,468

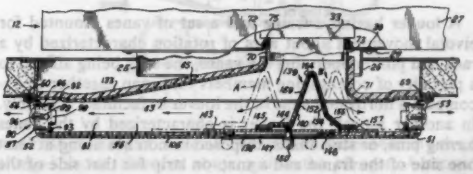
AIR FLOW CONTROL DEVICE

Carl A. Schueler, Austin, Tex., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed June 8, 1970, Ser. No. 44,210

Int. Cl. F24f *13/06*

U.S. Cl. 98—41 R **4 Claims**



A flow control device for directing air being delivered into a chamber in either of two different directions or to selectively direct part of the air being delivered in one direction and the other part in another direction. The flow control device may

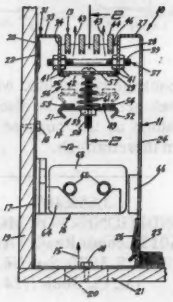
also include passage means through which air may be drawn from the chamber into a conditioning device, such as the evaporator of an air conditioning apparatus mounted on the roof of a vehicle, and then delivered back in cooled condition back into the chamber.

3,680,469

AIR CABINET ASSEMBLY

Robert J. Vandermey, Delano, Minn., assignor to Industrial Louvers, Inc., Delano, Minn.

Filed Nov. 20, 1970, Ser. No. 91,459
Int. Cl. F24f *13/10*
U.S. Cl. 98—41 R **10 Claims**



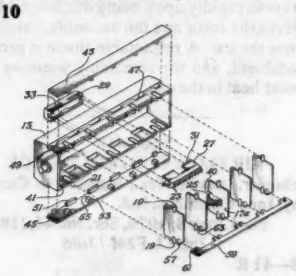
An air cabinet for distributing and controlling the flow of the air to a room. Cabinet has an elongated housing with a chamber for receiving air and flanges having inwardly turned shoulders on opposite sides of an elongated outlet passage open to the chamber. Adjustable nut and bolt assemblies secured to the flanges hold the housing in assembled relation and frictionally holds a grill between the flanges. A damper unit is mounted on the shoulders independent of the grill for regulating the flow of air through the outlet passage.

3,680,470

LOUVER WITH A REDUCED TURNING RADIUS

Roy M. Neece, Haltom City, Tex., assignor to Dynaplastics, Inc., Ft. Worth, Tex.

Filed Oct. 15, 1970, Ser. No. 81,065
Int. Cl. F24f *13/00*
U.S. Cl. 98—110 **12 Claims**



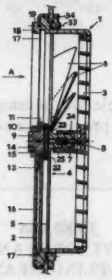
A louver having a frame and a set of vanes mounted for pivotal movement about axes of rotation characterized by a rack and pinion operating the vanes, the rack being affixed to a plurality of co-engaging members that snap together to encompass a horizontal vane in the louver to facilitate assembly. In another aspect, the louver is characterized by the vanes having pins, or stub shafts, disposed in notches along at least one side of the frame and a snap-on strip for that side of the frame to hold the vanes in place. Moreover, the vanes overlap so that they can completely block flow of a fluid through the louver. Specific structural features such as the protrusions of the snap-on strip engaging apertures in the frame, are also disclosed.

3,680,471

VENTILATION REGULATING DEVICE

Douwe Rosendale, 510 Hengelslaan, The Hague, Netherlands

Continuation-in-part of Ser. No. 65,309, Aug. 19, 1970, abandoned, which is a continuation of Ser. No. 783,939, Dec. 16, 1968, abandoned. This application Aug. 28, 1970, Ser. No. 67,803
Claims priority, application Netherlands, Dec. 18, 1967, 6717235
Int. Cl. F23l *13/00*
U.S. Cl. 98—117 **9 Claims**



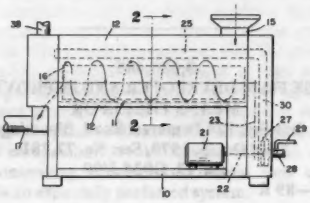
A regulator for the optimal ventilation of any enclosed space, comprising an air passage formed in an annular casing, a portion of which passage, at one end of the annulus, is closed by a partition, the other portion of which passage is sealable by means of a control valve in the shape of a disc having through passages, the disc being coaxial with the casing and rotatably mounted therein, the ventilation being effected by making use of the difference in air pressure on both sides of the passage.

3,680,472

APPARATUS AND METHOD FOR TREATING GRAINS AND LEGUMES

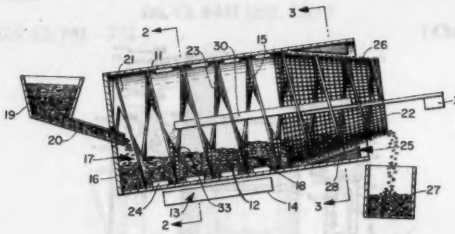
Robert F. Skelton, Bluffton, and Harry Truax, Mooresville, both of Ind., assignors to Mix-Mill, Inc., Bluffton, Ind.

Filed April 13, 1970, Ser. No. 27,896
Int. Cl. A23k *1/00*
U.S. Cl. 99—235 R **18 Claims**



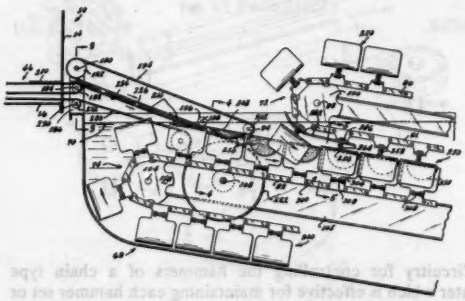
A machine for heat treating granular, organic materials and primarily, though not exclusively, intended for such treatment of whole soybeans and corn, comprising a drum mounted for rotation within an elongated receiver, the drum being constructed and arranged to define, with a portion at the peripheral wall of the receiver, a peripheral series of pockets travelling with the drum, a fluid-fuel burner associated with the receiver and arranged to discharge, into a portion of the receiver in which the pockets are outwardly open, a longitudinally-extending, peripherally-restricted wall of flame impinging on said drum, the burner including flame guard means constructed and arranged to establish such a wall of flame, and means for driving the drum to cause such granular material to be moved rapidly and intermittently through the flame wall and in close proximity to the source of the infra-red energy.

3,680,473
APPARATUS AND PROCESS OF PUFFING
William T. Bedenk, Springfield Township, Hamilton County, and Lawrence Grabel, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sept. 30, 1970, Ser. No. 76,771
Int. Cl. A23l *1/18*
U.S. Cl. 99—238.6 5 Claims



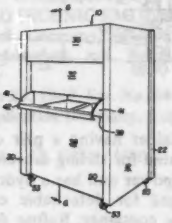
Ready-to-eat breakfast cereals are puffed by contact with a bed of heated granular material for a uniform length of time. Unpuffed cereal particles are deposited in an unheated zone and thereafter conveyed through a heated granular material-containing puffing zone whereby the heat from the granular material causes a puffing of the cereal particles. As the cereal particles are being conveyed, the major portion of the granular material is continuously separated therefrom. The remaining portion of granular material is screened out from the puffed flakes during the later phase of the conveying process and is separately conveyed back into the puffing zone. The puffed cereal particles when discharged from the continuous conveying operation are granular material-free and uniformly puffed. The invention also relates to a preferred puffing apparatus.

3,680,474
TACO SHELL COOKING MACHINE
Robert E. Brown, Pasadena, Calif., assignor to F & M Taco Shell Company, Los Angeles, Calif.
Filed March 28, 1969, Ser. No. 811,540
Int. Cl. A47J *37/12*
U.S. Cl. 99—353 5 Claims



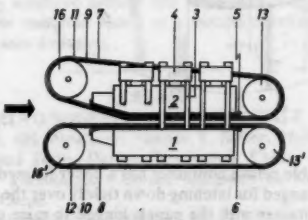
The machine is constructed to automatically dry partly cooked tacos or tortillas before being formed and then to automatically form them while completing cooking in a vat or tank of cooking oil. The dried tortillas are carried by a conveyor to the cooking and forming mechanism. This mechanism comprises two sets of conveyors that form the tortillas into the taco shape and carry them down through the cooking oil after which they are released and allowed to float to the surface after which the formed and cooked tacos are carried away. One conveyor is arranged over the other, each conveyor carries a series of V-shaped forming members arranged so that the forming members on the lower conveyor telescope into the forming members on the upper conveyor as they are passed through the cooking oil. The tortillas are carried into a position between the upper and lower forming members and are then formed as the upper members telescope down over the lower members.

3,680,475
TRASH COMPACTOR CABINET
Floyd R. Gladwin, 14500 Eureka Road, Southgate, Mich.
Filed May 14, 1971, Ser. No. 143,382
Int. Cl. B30b *15/00*
U.S. Cl. 100—100 9 Claims



A cabinet for a trash compactor having a vertically arranged open top, disposable container for receiving trash and a vertically downwardly movable ram for compressing the trash in the container, including a floor pan for supporting the container and a horizontal frame above the floor pan for supporting the ram and a means for moving the ram, with the side edges of the floor pan and frame interconnected by vertical, sheet metal side cabinet panels, each having its forward and rear edges bent into vertical tubular shapes which form the four vertical corners of the cabinet. The tubular shapes function as columns to support the frame and ram, and the panels function to receive in tension and to absorb the reaction load of the ram upon the frame and the compressive load upon the pan, which loads are transmitted to the panels by the frame and pan.

3,680,476
CONTINUOUSLY OPERATING PRESS
Heinrich Pfeiffer, Eppingen/Baden, Germany, assignor to J. Dieffenbacher GmbH, Machinenfabrik, Eppingen/Baden, Germany
Filed Aug. 4, 1970, Ser. No. 60,812
Claims priority, application Germany, Aug. 5, 1969, P 19 39 784.3
Int. Cl. B30b *5/04*, *15/00*; B67b *3/26*
U.S. Cl. 100—151 9 Claims



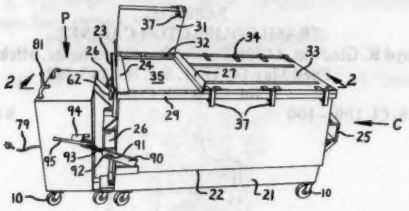
A first plurality of endless steel belts is interposed between a plunger and a table and abuts against the plunger. A second plurality of endless steel belts is interposed between the plunger and the table and abuts against the table. Different combinations of drive rollers and deflection rollers are utilized to move the steel belts around the plunger and around the table.

3,680,477

PORTABLE REFUSE PACKER

Richard G. Glanz, 3638 N.E. 139th Ave., Portland, Oreg.

Division of Ser. No. 47,300, June 18, 1970. This application Aug. 13, 1971, Ser. No. 171,515
Int. Cl. B30b 15/06
U.S. Cl. 100—220 10 Claims



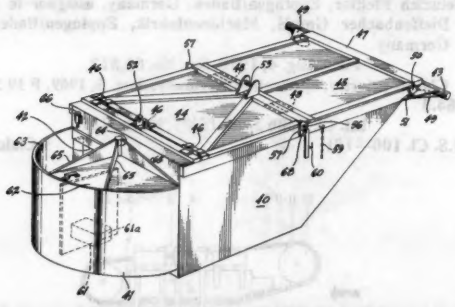
A wheeled container having a pair of hinged lids has a packer plate mounted for sliding movement within the container. A wheeled power unit has a hydraulic cylinder with a piston rod arranged for detachable connection with the packer plate in the container. Refuse deposited in the container is crushed and compressed to a small volume by the packer plate and when the container is full the power unit is connected to an empty container. Then the filled container is wheeled to a loading area for garbage trucks and its contents dumped into a truck. Thus, the packer is brought to the refuse instead of following the conventional practice of transporting the refuse to the packer.

3,680,478

REFUSE CONTAINER

George J. Beachner, Jr.; Howard A. Beachner, and Santo C. Panzarella, all of Rochester, N.Y., assignors to S. H. & G. Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 797,436, Feb. 7, 1969, abandoned
Filed June 17, 1970, Ser. No. 47,009
Int. Cl. B30b 7/00
U.S. Cl. 100—229 A 18 Claims



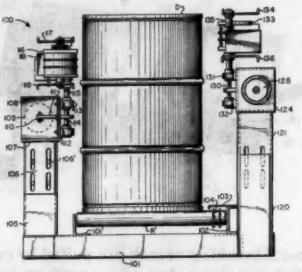
A portable refuse container has a cover formed of a pair of panels arranged for latching down tightly over the top opening of the container with the panels hinged to raise up automatically as the container is dumped. The forward edge of the container has a pivot axis about which the container is raised for dumping, and a cable for raising the container is attached to or threaded through a retainer on the cover so that the cover lifts as the container is raised. Releasable latches normally hold the cover down so that the container can receive compacted refuse.

3,680,479

DRUM POSITIONING AND PRINTING APPARATUS

Hal C. Nichols; Sibley R. Irwin, and Robert K. Collins, Jr., all of Knoxville, Tenn., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Sept. 22, 1970, Ser. No. 74,413
Int. Cl. B41f 17/22
U.S. Cl. 101—38 R 8 Claims



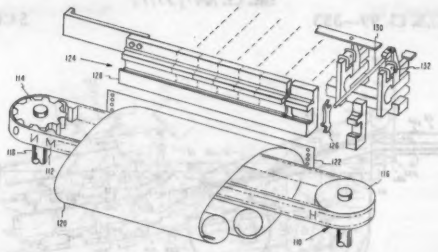
An apparatus for lifting drums off a conveyor and rotating them while they are either labeled or printed on. A converging, horizontally disposed group of conical rollers arranged in a hub and spoke configuration are lifted at their hub or tip end so as to lift the drum off of conveyor rollers and a pair of opposing and horizontally positioned driven belt conveyor systems which converge on the drum to rotate it past an inking printer and/or labeler.

3,680,480

CHAIN PRINTER HAMMER CONTROL

Neil C. Berglund, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed April 26, 1971, Ser. No. 137,344
Int. Cl. B41j 9/00, 1/20; G06f 7/00
U.S. Cl. 101—93 C 10 Claims



Circuitry for controlling the hammers of a chain type printer which is effective for maintaining each hammer set or energized for a period greater than the time of one print scan (the time between alignments of successive print characters on the chain with the same print position) and less than the time of two print scans. An address, having a predetermined relationship with the address in main storage of a byte to be printed, in the form of a particular character is stored in a hammer address register; and the address in this register is applied to a set decoder for causing a hammer to be fired and is also applied to a reset decoder for causing resetting of a hammer. The decoders decode the address in the hammer address register differently so that the hammer remains set or energized for the period mentioned.

3,680,481

FRICTIONAL GEAR BACKLASH ELIMINATING MEANS IN SHEET FED ROTARY PRINTER

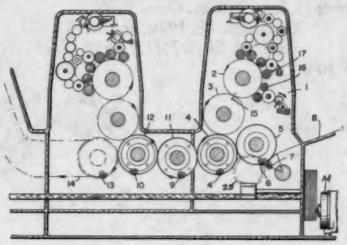
Hubert H. A. Sternberg, Heidelberg, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed July 1, 1969, Ser. No. 838,090

Claims priority, application Germany, July 6, 1968, P 17 61 780.0

Int. Cl. B41f *5/02, 13/16*

U.S. Cl. 101—232 1 Claim



Sheet-fed rotary machine for letterpress or offset printing includes at least one sheet transfer drum for transferring a suitably adjusted sheet from a sheet feed table to the grippers of an impression cylinder or from the impression cylinder of one printing stage to an impression cylinder of a succeeding printing stage, the sheet transfer drum being provided with an annular raceway or travel ring disposed in pressure contact with a corresponding annular raceway provided for an adjacent drum or cylinder.

3,680,482

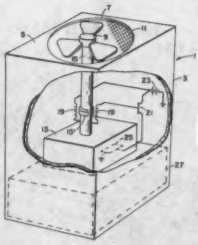
AIR CURRENT OPERATED LAND MINE

Marvin J. Hall, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed April 29, 1970, Ser. No. 26,802

Int. Cl. F42b *23/26*

U.S. Cl. 102—8 3 Claims



A land mine to be detonated by strong vertical air currents produced by a decending helicopter. The mine includes a housing having a screened opening in one of the housing surfaces. A rotatable fan is located in the opening and a detonator is operated by the fan to ignite a high explosive in the mine housing. The fan is recessed from the housing surface to prevent horizontal wind reaction with the blades of the fan.

3,680,483

ANNULAR FLARE GRAINS

Gerald R. Staudacher, Bay City; George A. Lane, and Alan C. Kott, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 6, 1970, Ser. No. 78,640

Int. Cl. C06d *1/10*

U.S. Cl. 102—37.8 10 Claims

Disclosed is an annular grain for use as an illuminating or signaling flare. The grain is prepared by pour casting a composition made up of an oxidizer, particulate magnesium and an epoxy resin-curing agent combination into a desired form and curing it into a coherent grain.

3,680,484

PYROTECHNIC EMITTER

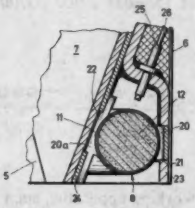
Gunter Stetter, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung, Munchen, Germany

Filed July 25, 1969, Ser. No. 844,797

Claims priority, application Germany, Aug. 3, 1968, P 17 79 379.0

Int. Cl. F42b *13/40*

U.S. Cl. 102—87 16 Claims



A pyrotechnic emitter particularly for the infrared spectral range comprises a radiation emitting body and an energy source for heating the body. The device is particularly applicable for use in the infrared tracking of automatically movable bodies such as a missile and may advantageously be formed in an annular shape of a plurality of annular segmental parts. The emitter includes a thin-walled tubular housing of any desired cross section which is bent in accordance with the geometry of its arrangement for example into an annular shape to fit adjacent the discharge end of the nozzle of a missile. The energy source comprises a pyrotechnic glow charge which fills the tubular member and gives off its heat energy without appreciable evolution of gas. The thin-walled tube may comprise a metal tube having a wall thickness of less than 1 milimeter or it may be made of oxide ceramic, or graphite. The housing is advantageously held in place in association with a device such as a missile by securing claws, eyelets or attaching cuffs which are advantageously made of the same material as the individual tube sections of the housing. A mirror coating is advantageously arranged around and faces the emitter in order to reduce the emission losses in a direction other than the desired emission direction.

3,680,485

SALVO SQUEEZEBORE PROJECTILE

Melvin Zaid, old Westbury; Martin T. Soifer, Melville, both of N.Y., and Julius Darigo, Newington, Conn., Russell S. Robinson, Farmington, Conn., assignors to Colt's Inc., Hartford, Conn.

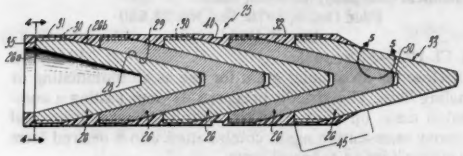
Filed Dec. 8, 1969, Ser. No. 883,013

Int. Cl. F42b *11/02*

U.S. Cl. 102—92.4 14 Claims

A series of substantially identical subprojectiles are secured together to form a projectile assembly with the subprojectiles in intimate engagement to substantially eliminate voids and trapped volumes between adjacent subprojectiles or between the projectile assembly and the gun barrel. The projectile as-

sembly is secured in a cartridge case to form a cartridge for use in a squeezebore firearm barrel, wherein the projectile assembly separates to form a salvo of separated subprojectiles.



Additionally, provision is made to alter the identity of the subprojectiles to permit inclusion of a tracer projectile, an armor piercing subprojectile or the like.

3,680,486

MOBILE TRACK WORKING APPARATUS

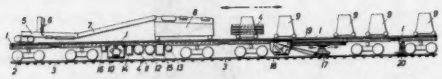
Franz Plasser, and Josef Theurer, both of Johannesgasse 3, 1010 Vienna, Austria

Filed Oct. 13, 1969, Ser. No. 865,929

Claims priority, application Austria, Oct. 25, 1968, A 10452

Int. Cl. E01b *27/00, 31/00*

U.S. Cl. 104—1 **17 Claims**



A mobile track working apparatus, such as a track renewal train, comprises a car frame whose loading and transport platform has a track working tool mounted on the car frame underneath the platform.

3,680,487

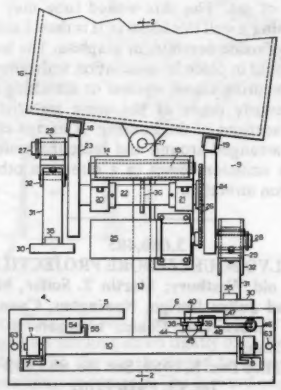
WALKING ROBOT AMUSEMENT RIDE

Salvatore Cirami, 36-32 32nd St., Long Island City, N.Y.

Filed Feb. 20, 1970, Ser. No. 13,124

Int. Cl. A63g *21/04*

U.S. Cl. 104—53 **6 Claims**



This invention provides improvements in an amusement roundabout disclosed in my prior U.S. Pat. No. 3,507,222 which discloses a stepping robot secured to and traveling on a guiding and supporting slotted platform type of trackway. The present invention provides a simplified and more rugged construction of the railway truck used to support the robot, specifically in the coupling means connecting the robot to the truck; provision of means to counterbalance the robot's own weight to reduce the normal workload on the stepper; provision of means to limit an excessive workload; and, provision of means to cause the passenger compartment to rock from side to side as a result of and in specific synchronization with the robot's stepping action.

3,680,488

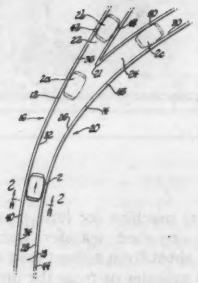
TRANSPORTATION SYSTEM HAVING INERTIAL SWITCH SYSTEM

Richard H. Donlon, Denver, Colo., assignor to Transportation Technology, Inc., Denver, Colo.

Filed Sept. 16, 1970, Ser. No. 72,602

Int. Cl. E01b *25/12*; B61b *13/08*

U.S. Cl. 104—130 **9 Claims**



A transportation system particularly suitable for vehicles having omnidirectional suspension system, such as air cushion devices, including a system of paths of travel for the vehicle having a plurality of diverging branch lines and a main line feeding toward the junction of the branch lines. A transition section connects the main line with the branch lines and is operable for directing the vehicle from the main line onto a selected one of the branch lines in accordance with the speed of the vehicle.

3,680,489

VEHICLE PROPELLED BY LINEAR MOTOR

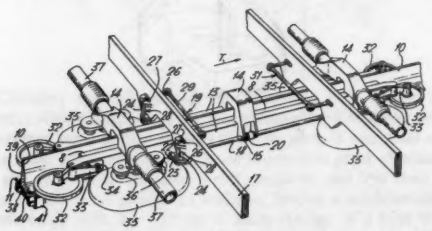
Christopher Durrant English, Burwell, England, assignor to Tracked Hovercraft Limited, London, England

Filed March 20, 1970, Ser. No. 21,273

Claims priority, application Great Britain, March 21, 1969, 15,137/69; March 21, 1969, 15,138/69; March 21, 1969, 15,139/69

Int. Cl. B61l *13/00*

U.S. Cl. 104—148 LM **18 Claims**



A vehicle for operation along a prepared track has a double-sided linear induction motor stator for propelling the vehicle by co-operation with a reaction plate forming part of a reaction rail extending along the track. The stator is connected to

the vehicle body by a linkage which is capable of transmitting only a longitudinally directed force such as the stator tractive force, and is guided by guide means which co-operate with the reaction rail preferably between the reaction plate and the track and which are so arranged as to be incapable of transmitting any substantial rolling moment to the reaction rail. Stator support and roll control is effected separately from the stator guidance.

3,680,490

RESILIENT RAILWAY BOGIE SIDE BEARINGS

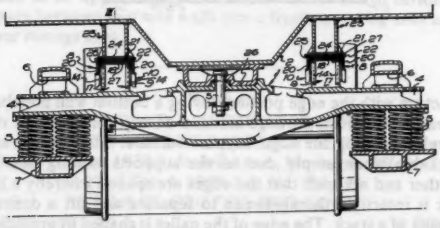
Eric J. Wilson, and Alan Henry Briggs, both of Sheffield, England

Continuation of Ser. No. 814,144, April 7, 1969, abandoned. This application Aug. 2, 1971, Ser. No. 168,492

Claims priority, application Great Britain, April 10, 1968, 17,131/68

Int. Cl. B61f *5/14, 5/16;* F16c *17/04*

U.S. Cl. 105—199 CB **2 Claims**



A sidebearer for use as a resilient connection between a railway vehicle and a bogie to ensure that a railway vehicle can negotiate twists in the track of up to 1 in 150 without there being an intolerable transfer of load transversely across either bogie, to discourage rolling of a vehicle body as a whole on its bogies and to discourage hunting of the bogies themselves comprises a pair of rubber bushes between inner and outer housing members at least one of which has a bearing surface with which the longitudinal axes of the rubber bushes in the unloaded sidebearer make equal and opposite angles of less than 45°, the spring rates of the bushes being in the ranges one-half ton per inch to 8 tons per inch perpendicular to the bearing surface and 12½ tons per inch to 14 tons per inch parallel to the bearing surface.

3,680,491

FREIGHT BRACING SYSTEM

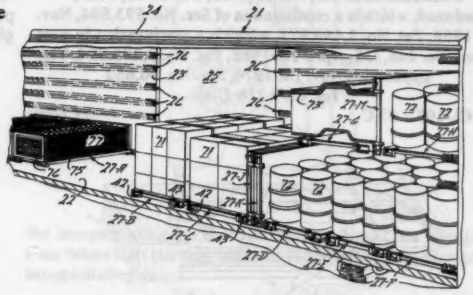
Harvey W. Chapman, Detroit, and Jackson A. Shook, Northville, both of Mich., assignors to Evans Products Company

Filed Dec. 13, 1967, Ser. No. 690,237

Int. Cl. B61d *45/00;* B60p *7/14*

U.S. Cl. 105—369 B **1 Claim**

Two embodiments of freight bracing systems for supporting or bracing freight within a cargo area. Each system embodies belt rails that extend along opposite walls of a cargo area and which belt rails define spaced attachment means along their length. A number of bracing units are supported upon the belt rails with their freight engaging faces extending either horizontally whereby the units function as pallets or with their freight engaging faces extending vertically whereby the units function as bulkheads. Each unit is capable of acting as a pallet or a bulkhead. In one embodiment, the end fittings which support the bracing unit upon the belt rails include releasable locking means with an actuating mechanism that is adapted to be engaged by the forks of the fork lift truck regardless of the



position of the unit for release of the latching means automatically upon the engagement of the forks with the release mechanism.

3,680,492

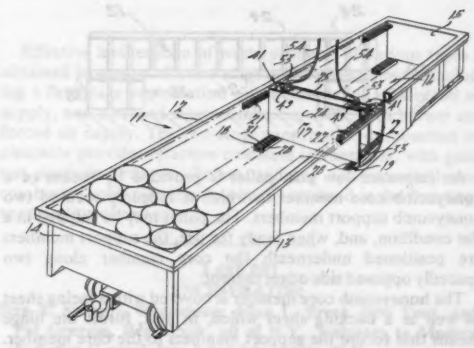
GONDOLA BULKHEAD

Kenneth A. Weage, Plymouth, Mich., assignor to Evans Products Company

Filed Aug. 31, 1970, Ser. No. 68,186

Int. Cl. B61d *17/00*

U.S. Cl. 105—376 **10 Claims**



A bulkhead arrangement that may be used in gondola cars for bracing freight during transit. Two embodiments of locking mechanisms for the bulkhead are shown. Each embodiment includes a pivotally supported locking member that coacts with a car mounted rail for locking the bulkhead assembly in position. A lifting lug is associated with each locking member and affords a means for attachment of a hook or other device for lifting the bulkhead assembly. The lifting lugs are pivotally supported and are interconnected with the locking members for moving the locking members from a locked position to a released position when the lifting lugs pivot in response to the exertion of a lifting force.

3,680,493

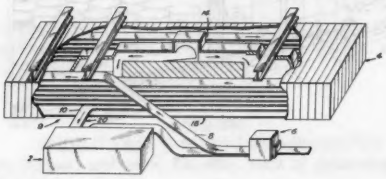
CONVEYOR SYSTEM

William E. Lanham, 3456 Woods Drive; Gene C. Miller, 3540 Woods Drive, and William E. Lanham, Jr., 3044 Katherine Valley Road, all of Decatur, Ga.

Continuation of Ser. No. 809,153, March 21, 1969, abandoned, which is a continuation of Ser. No. 593,504, Nov. 10, 1966, Pat. No. 3,440,973, which is a continuation-in-part of Ser. No. 448,732, April 16, 1965, Pat. No. 3,285,394. This application Nov. 18, 1970, Ser. No. 90,652

Int. Cl. A21b *3/06*

U.S. Cl. 107—57 C 5 Claims



A conveyor system including a monorail drive having vertically extending brackets which support a continuous product support surface. The product support surface includes separately supported grid surfaces which interleave with the next adjacent grid thereby to facilitate turning around a radius while maintaining a continuous product support surface.

3,680,494

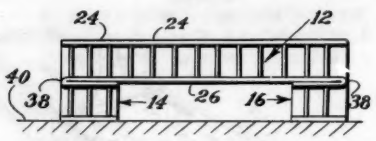
PALLET

Joseph P. Glasi, 630 Shore Road, Long Beach, N.Y.

Filed March 9, 1971, Ser. No. 122,332

Int. Cl. B65d *19/00*

U.S. Cl. 108—51 8 Claims



An improved low cost pallet is provided by means of a honeycomb core member to which is hingedly secured two honeycomb support members. The pallet may be shipped in a flat condition, and, when ready for use, the support members are positioned underneath the core member along two spacedly opposed side edges thereof.

The honeycomb core member is covered with a facing sheet as well as a backing sheet which, in part, forms the hinge means that secure the support members to the core member. Strips of tape may be used to cover a small portion of the facing sheet along the junctures of the core member and the support members. Adhesive means may be provided on the backing sheet so that, in the folded-under condition, the support members adhere to the backing sheet.

3,680,495

PALLET STRUCTURE

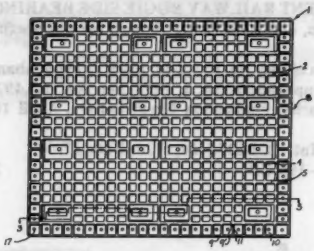
Daniel W. Pike, Overland Park, Kans., assignor to Hi-Line Plastics Incorporated, Olathe, Kans.

Filed Oct. 12, 1970, Ser. No. 79,868

Int. Cl. B65d *19/18*

U.S. Cl. 108—53 7 Claims

A pallet structure comprises a grid or network formed of a plurality of spaced ribs substantially narrower in width than in depth and having upper edges substantially coplanar and defining a load supporting platform. The ribs are preferably of substantially equal lateral spacing across the pallet structure but may vary with the spacing being such that the ribs will properly support the goods to be deposited thereon. The structure has a plurality of spaced vertical hollow legs or supports depending from the load supporting platform and a marginal edge portion extending around the periphery of the grid



structure with the edge portion having a bottom wall member extending between an edge rib and an adjacent parallel rib thereby defining an edge support surface. The pallets are stackable when empty due to the supports nesting one in another and are such that the edges are spaced whereby a lift fork is insertible therebetween to separate and lift a desired portion of a stack. The edge of the pallet is shaped to provide a convenient portion for manually moving individual pallets.

3,680,496

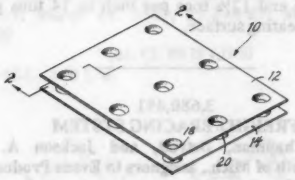
PLASTIC PALLET

Edward B. Westlake, Jr., 307 Lincoln Ave., Havertown, Pa.

Filed June 8, 1970, Ser. No. 44,154

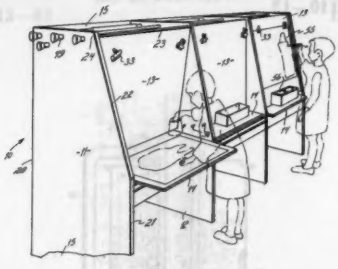
Int. Cl. A47b *19/38*

U.S. Cl. 108—58 6 Claims



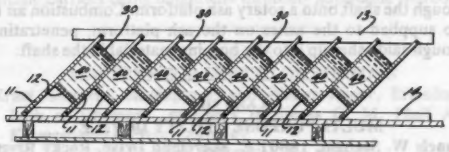
A sterilizable reusable pallet made of a thermoplastic comprising a top substantially rectangular load engaging sheet, a bottom sheet substantially coextensive therewith, spaced plastic load sustaining legs, and means affixing said legs to and between said sheets along the sides and across the center of the sheets to provide a pallet with entry ways for forks of a fork lift truck from all four sides between the legs and the top and bottom sheets, the pallet acting to resist bending in vertical planes transverse to the main horizontal plane of the pallet. The invention also encompasses economical and efficient methods of making the pallet.

3,680,497
EASEL
Lane L. Sargeant, 2890 Ziegle Ave, Cincinnati, Ohio
Filed April 10, 1969, Ser. No. 814,972
Int. Cl. A21b *1/00*
U.S. Cl. 108—60 6 Claims



An easel formed by vertical side walls, a slidably mounted horizontal shelf and a panel pivotally mounted above said shelf at its upper ends between said side walls to divide the space between said side walls into a front operating area and a rear storage area.

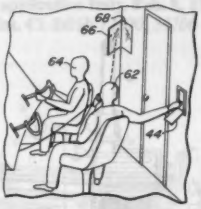
3,680,498
STRUCTURE AND A METHOD FOR ISOLATING A BUILDING AGAINST RADIOACTIVE FALLOUT
Charles J. Roos, 1832 E. Isabella Ave., Muskegon, Mich.
Filed Dec. 4, 1968, Ser. No. 781,123
Int. Cl. G21f *7/00*; E04h *9/04*
U.S. Cl. 109—1 S 8 Claims



1. A method for providing radioactive fallout shielding for a structure, said method having the following steps: providing portable containers; providing a plurality of shelves for supporting said containers; arranging said shelves adjacent to a generally non-shielding defining surface of said structure; placing said portable containers on said shelves in closely adjacent fashion such that each of said shelves supports a generally horizontal row of containers; and filling said portable containers with shielding material such that a substantially continuous wall of shielding material is formed adjacent to said defining surface of said structure such that the shielding ability of said surface is increased.

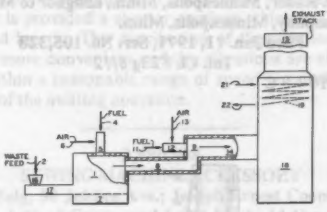
3,680,499
CRIME PREVENTION SYSTEM
Peter Boudreau, 10 Forbes Ave., Burlington, Mass.
Filed Oct. 7, 1970, Ser. No. 78,653
Int. Cl. G08b *15/02*
U.S. Cl. 109—32 10 Claims

A hijack prevention system for an airplane wherein a conventional appearing telephone is positioned outside the pilot's cabin on the airplane. The telephone is provided with apertures for the emission of an incapacitating gas. The emission of the gas is controlled by the pilot or copilot from within the pilot's cabin. When a hijacker identifies himself during flight, the stewardess requests the hijacker to converse with the pilot over the telephone. While conversing with the suspected hijacker, the pilot has a chance to determine for himself whether the person is really a serious hijacker. If the pilot so decides, he activates the hijack prevention system by releasing



the incapacitating gas through the telephone. The hijacker is then taken into custody while he is under the influence of the incapacitating gas.

3,680,500
TWO-STAGE SMOKELESS INCINERATOR
Robert C. Pryor, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Oct. 8, 1970, Ser. No. 79,144
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 A 18 Claims



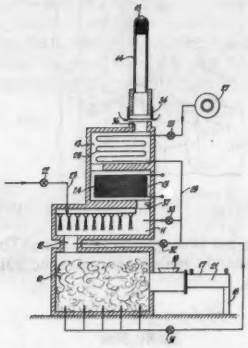
Effective incineration of waste products of various types is obtained by means of a two-stage grateless incinerator including a first stage vaporization zone with burner and forced air supply, and a second stage combustion zone with burner and forced air supply. The two-stage vaporization-combustion incinerator provides effective oxidative incineration, with gaseous products being smokeless, and any non-vaporized non-combusted solid matter is essentially retained in the first stage vaporization chamber.

3,680,501
INCINERATOR
Bela A. Szilagyi, Whitestone; Allan L. Brent, New York, and Pal Greguss, Rego Park, all of N.Y., assignors to Modern Pollution Control, Inc., Long Island City, N.Y.
Filed July 8, 1970, Ser. No. 53,111
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 A 2 Claims

An incinerator is disclosed which burns garbage so that the hydrocarbon materials therein are completely burned leaving only carbon dioxide and water as end products. A primary burning chamber of the incinerator is employed for burning the raw garbage giving off incompletely burned gases and fly-ash and soot which pass into a secondary burning chamber. The secondary burning chamber is lined with a refractory material which reflects incident and emits secondary radiation in the infrared region of the spectrum.

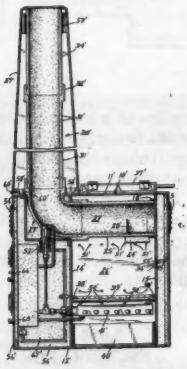
A method of operating the incinerator is also disclosed for bringing and maintaining the temperature of combustion in the secondary chamber such that the materials burning

therein will emit radiation in the infrared portion of the spectrum. In this way, the refractory will give off radiation in the



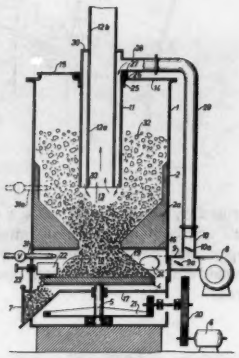
infrared spectrum to aid in heating the fly-ash insuring complete combustion in the secondary chamber.

3,680,502
OUTDOOR INCINERATOR
Arnold M. Rader, Minneapolis, Minn., assignor to Minneapolis Gas Company, Minneapolis, Minn.
Filed Jan. 11, 1971, Ser. No. 105,328
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 C **15 Claims**



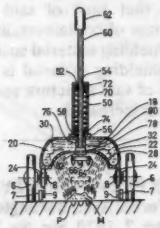
A housing having first and second chambers defined therein with the first chamber having a grating mounted therein with a burner therebelow for receiving a charge of material to be burned and the second chamber having an elongated vertical stack extending thereinto a substantial distance so that an elongated annular portion is defined, which is in communication with the first chamber. A burner is positioned in the second chamber so that gases and other materials generated by the charge of material and passing from the first chamber through the annular portion of the second chamber to the inlet of the stack are ignited and burn substantially completely in the stack. Openings are provided in the housing adjacent the grating and adjacent the upper end of the first chamber for the ingress of air and the openings are constructed to regulate the maximum burning rate in the first chamber and provide sufficient air for substantially complete combustion in the stack.

3,680,503
INCINERATOR
Gunnar Danielsson, Tystberga, and Knut Ludvig Winquist, Orebro, both of Sweden
Filed Sept. 29, 1970, Ser. No. 76,368
Claims priority, application Sweden, Oct. 2, 1969, 13585/69
Int. Cl. F23g *5/00*
U.S. Cl. 110—13 **3 Claims**



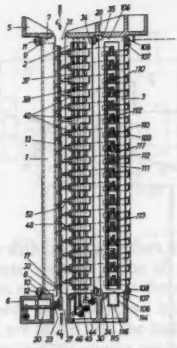
An incinerator consists of a vertical shaft, a tube for the supply of combustion air extending into the shaft from the top of the incinerator, an exhaust gas tube extending coaxially inside the combustion air supply tube. The material to be combusted is supplied from the top of the shaft. The ashes descend through the shaft onto a rotary ash platform. Combustion air is also supplied to the ashes on the ash platform, penetrating through said ashes up into the burning material in the shaft.

3,680,504
MULTI-PURPOSE UTILITY DEVICE
Francis W. Seebald, 18801 E. Shoreland Drive, Rocky River, Ohio
Filed Oct. 27, 1969, Ser. No. 869,598
Int. Cl. A01c *23/02*
U.S. Cl. 111—6 **6 Claims**



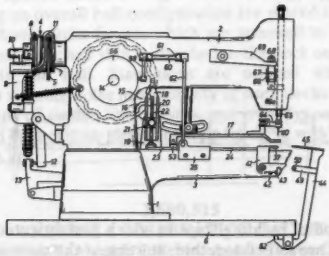
A multi-purpose utility device portably mounted on a wheeled frame for movement along the ground including an agitator mechanism adapted for selective coacting engagement with the ground and a fluid and/or solids dispensing system for delivering fluid and/or solid treating materials onto the ground in proximity to the agitator mechanism for independent and/or simultaneous fluid processing, chemical treating or mechanically working deleterious materials disposed on the ground.

3,680,505
EMBROIDERY MACHINE
Rudolph Reich, An der Ringstr. 6, 545 Neuwied, Germany
Filed Aug. 18, 1970, Ser. No. 64,690
Claims priority, application Germany, Aug. 20, 1969, P 19 42 274.3
Int. Cl. D05c 3/04
U.S. Cl. 112—83 11 Claims



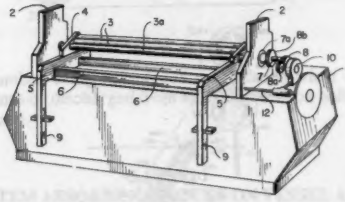
Embroidery machine having vertical embroidery tool carriers parallel to the vertically fed fabric to-be-embroidered and infinitely adjustable sideways in a plane parallel to the fabric plane on top and bottom traverses, with the tool units on the carriers being heightwise infinitely adjustable thereon.

3,680,506
MACHINE FOR SEWING ON BUTTONS
Ernst Albrecht, Hochspeyer, and Walter Hager, Erlenbach, both of Germany, assignors to Firma G. M. Pfaff AG, Kaiserslautern/Pfalz, Germany
Filed July 29, 1970, Ser. No. 59,113
Claims priority, application Germany, Aug. 2, 1969, G 69 30 735.3
Int. Cl. D05b 3/14
U.S. Cl. 112—112 3 Claims



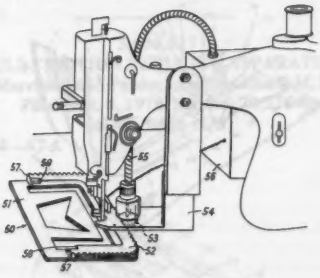
Machine for sewing on buttons comprising a button clamp and a material carrier, both of which are connected with a common control device driven by the machine to effect horizontal movements, which operates by switching a transmission (23, 24, 27, 28, 29) to the transfer of the drive for the material carrier (45), that is connected with a second control device (56) driven by the machine.

3,680,507
MULTINEEDLE QUILTING MACHINE
Giannino Landoni, Via Verdi, 133, Cassano Magnago, Italy
Filed Jan. 28, 1970, Ser. No. 6,346
Claims priority, application Italy, Feb. 8, 1969, 12632 A/69
Int. Cl. D05b 11/00, 35/00
U.S. Cl. 112—118 2 Claims



Multineedle quilting machine for performing stitching lines along different paths, having the carriage imparting the transverse movement to the material to be quilted which is constantly arranged within the supporting shoulders of the sewing mechanism during its complete reciprocating stroke. This is achieved by means of a simple gear coupling between the main shaft of the machine and the drawing roller axle. In this way there is provided a shorter carriage which is also of less weight and inertia. The distribution of the reactions is consequently more convenient and the vibrations are eliminated, at least within a reasonable range of speed permitting higher velocities of the quilting operation.

3,680,508
SEWING MACHINE ACCESSORY
Reginald Baig, 58 Jubilee Ave.; Joseph Ernest Cooper, 4 Holland St., both of Crewe, and Louis Meek, 14 Geneva Drive, Newcastle-under-Lyme, all of England
Filed May 18, 1970, Ser. No. 38,189
Int. Cl. D05b 21/00
U.S. Cl. 112—121.12 3 Claims

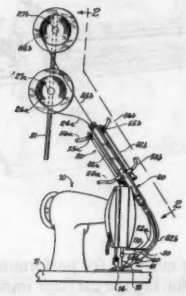


A jig for use in conjunction with a Sewing Machine to sew pocket flaps and the like, comprising plates between which panels of material are clamped and which define a sewing line along which passes the Sewing Machine needle. The jig has a drive track, preferably on an upstanding nib parallel to the sewing line, and the sewing machine has drive means for driving on the track and moving the jig and Sewing Machine head relatively.

3,680,509
APPARATUS FOR FEEDING AND CUTTING STRIP MATERIAL

Samuel E. Miller, Wilmette, Ill., assignor to Quick Service Textiles, Inc., Chicago, Ill.

Division of Ser. No. 777,592, Nov. 21, 1968, Pat. No. 3,515,081. This application Jan. 27, 1970, Ser. No. 68,097
Int. Cl. D05b *35/06*
U.S. Cl. 112—152 2 Claims

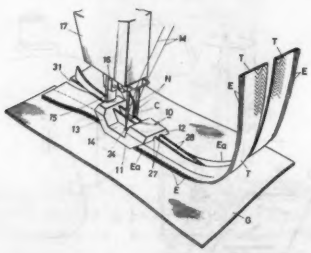


Apparatus for sewing predetermined lengths of two or more different materials in strip from to a base strip in sequence along the latter. The base strip is fed continuously to the sewing station and the successive lengths of the first-mentioned materials are fed to the sewing station selectively in sequence. The first-mentioned materials are fed from respective sources of supply and are cut off to predetermined length cyclically by automatic or semiautomatic means.

3,680,510
PRESSER FOOT FOR A DOUBLE NEEDLE SEWING MACHINE

Hiroyuki Ebata, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan

Filed Dec. 2, 1970, Ser. No. 94,438
Claims priority, application Japan, Dec. 24, 1969, 44/123274
Int. Cl. D05b *29/00*
U.S. Cl. 112—235 5 Claims

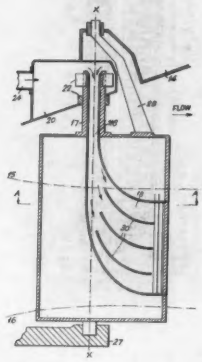


A sewing machine presser foot is disclosed for use with a double needle sewing machine. The improved presser foot of this invention is designed for forming the rows of stitchings that secure a slide fastener or its chain closely along the marginal portions on each side of an opening in a garment, which rows of stitching are concealed from view when the fastener is closed, for which purpose there is provided a pair of relatively deep guide channels for accepting and guiding an element-free edge and a greater portion of each stringer tape in such a manner that the fastener assumes a combination L and inverted-L sectional configuration during the sewing operation.

3,680,511
HYDROFOILS FOR SHIPS AND LIKE VESSELS

John Walter English, Shepperton, England, assignor to National Research Development Corporation, London, England

Filed Sept. 22, 1970, Ser. No. 74,311
Claims priority, application Great Britain, Sept. 25, 1969, 47,306/69; Oct. 24, 1969, 52,275/69
Int. Cl. B63h *25/14*; B63b *39/06*
U.S. Cl. 114—162 5 Claims

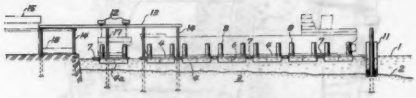


A control-surface device for use as a rudder or stabilizer fin. The devices described are of hydrofoil shape with jet discharge slots to either side of the device adjacent its distal portion. When used as a jet flap rudder, a jet of fluid is discharged from the advanced face of the rudder to assist steering. When used to provide a pair of stabilizer fins, jets of fluid are discharged from the leading faces of the fins as these are moved through the supporting fluid by a rolling motion of the ship.

3,680,512
METHOD OF BUILDING SHIPS

Ietoshi Yamura, Tokyo, Japan, assignor to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed June 2, 1970, Ser. No. 42,797
Claims priority, application Japan, Aug. 30, 1969, 44/68808
Int. Cl. B63b *3/02*
U.S. Cl. 114—46 4 Claims



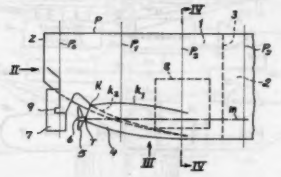
A method of building ships in which prefabricated sections of the hull are joined together, starting at the stern and working toward the bow. Each prefabricated section is deposited on a pontoon and is floated into position adjoining the already assembled sections and the supporting pontoon is coupled to the pontoon of the previously assembled section. The assembly takes place alongside a dock which may have a crane for completing the stern section as the assembly of the hull continues forwardly. After assembly of the hull, it may be launched by sinking the pontoons either at the dock or at a remote location, floating the hull away and refloating the pontoons and disconnecting them for reuse.

3,680,513

SHIP STERN FITTED WITH TWIN-SCREW PROPULSION

Mladen Klasic, Pula, Yugoslavia, assignor to Uljanik brodogradiliste i tvornica Dizel motora Pula u sastavu zdruzenog poduzeca Jadranbrod, Pula, Yugoslavia

Filed April 20, 1970, Ser. No. 30,085
Claims priority, application Yugoslavia, April 21, 1969, P 972/69
Int. Cl. B63b *1/08*
U.S. Cl. 114—57 4 Claims



The hull of a ship with twin propellers, varying in cross-section from approximate V-shape at the aft end via trapezoidal intermediate profiles to a U-shape at the midsection, forms a pair of bulb-shaped excrescences which surround the propeller shafts and are faired into the hull surface rearwardly of a bulkhead separating the engine room from an adjoining cargo compartment. The two bulbs define between them a shallow tunnel of progressively decreasing height, extending over not more than 15% of the length of the ship.

3,680,514

METHOD OF CONSTRUCTING A SHIP'S HULL

Herbert H. Gunn, 2334 W. 241st St., Space 48, Lomita, Calif.

Filed Jan. 29, 1971, Ser. No. 110,825
Int. Cl. B65b *3/08*
U.S. Cl. 114—65 R 7 Claims

A novel method of constructing a ship's hull whereby successive spaced decks having individual deck edge contours defining an overall hull configuration are placed in successive order above girder frames which are attached to a keel plate before an outer hull skin is attached to the deck outer edges to complete the hull. Stanchions are utilized which extend through suitable holes in a plurality of such decks to maintain alignment of center line, offsets, and overlays, and columns are used between the decks for support along with fore and aft I-beams.

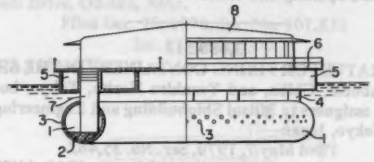
3,680,515

UNDERSEA OBSERVATION GALLERY

Shoji Yoneda, Kawasaki; Taiichiro Agari; Tetsuo Goto, both of Tokyo, and Kyuhei Taniguchi, Yokohama, all of Japan, assignors to Fujita Kogyo Kabushiki Kaisha, Shibuya-ku, Tokyo, Japan

Filed Feb. 26, 1971, Ser. No. 119,135
Claims priority, application Japan, May 4, 1970, 45/38127
Int. Cl. B63b *35/72*
U.S. Cl. 114—66 4 Claims

An undersea observation gallery comprising an annular chamber having sight windows in the outer peripheral wall thereof and an independent combination ballast tank and pontoon connected to the top of said annular chamber and communicated with said annular chamber by a stairway, said annular chamber being submerged or surfaced when water is charged into or discharged from said combination ballast tank and pontoon.

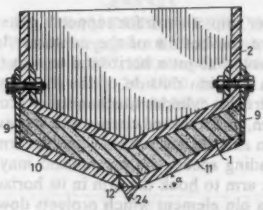


3,680,516

SYSTEM ABSORBING SHOCKS ON VESSEL AND IMPROVING ITS MOTION

Constantine Loverdos-Stelakatos, 5 Dimitriou Vassiliou Str., Neon Psychicon, Athens, Greece

Filed Aug. 13, 1970, Ser. No. 63,428
Claims priority, application Greece, Aug. 3, 1969, 40812
Int. Cl. B63b *1/34*
U.S. Cl. 114—67 R 8 Claims



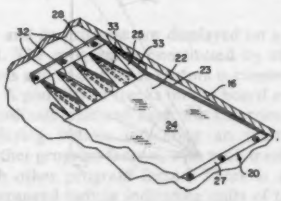
A compressible cushion is fixed on the hull of a boat or a vessel absorbing water-wave shocks and improving the hull flow; it may be fixed in a cavity of the hull. Some joints are described. The form of the compressible cushion will be such as to optimize shock absorption and flow conditions; it may also have adjustable compressibility. A compressible cushion attached to a rigid piece of material similar to a part of the hull forms a system easily attached to the hull.

3,680,517

HULL FRICTION REDUCING APPARATUS

Horace S. Morrison, 615 Pardee Lane, Haddonfield, N.J.

Filed Sept. 8, 1970, Ser. No. 70,376
Int. Cl. B63b *1/38*
U.S. Cl. 114—67 A 3 Claims



Apparatus for a water vehicle to reduce hull friction including a hollow body for location on a hull submerged beneath the water surface, the external contour of the body producing a surface region of reduced pressure and having an opening

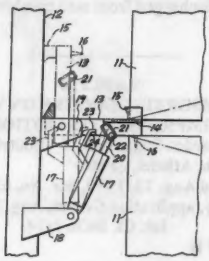
communicating through the reduced pressure region to the interior hollow of the body, together with an air conduit for conducting air to the internal hollow of the body for passage through said opening into contact with the hull exterior.

3,680,518

APPARATUS FOR FIXING CONTAINERS IN THE SHIP

Ichiro Tabuchi, Chiba, and Yasuhiro Harita, Tokyo, both of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed May 7, 1970, Ser. No. 35,482
Claims priority, application Japan, May 14, 1969, 44/37128
Int. Cl. B63b 25/22
U.S. Cl. 114—72 3 Claims



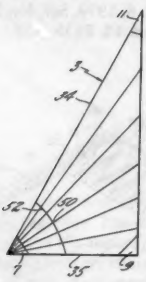
In a container ship, an arm for supporting the containers at positions above the bottom of the container loading space. The arm is pivoted about a horizontal axis so that it may be displaced to a position outside of the location for the containers. A hydraulic cylinder mechanism is provided for displacing the arm, and a slotted connection is provided between the mechanism and the arm so that when the arm is in position within the loading space, the mechanism may be displaced relative to the arm to hook the arm in its horizontal position. The arm has a pin element which projects downwardly from the horizontal position to engage in a hole in the top of the container and prevent lateral movement of the container, the arm serving to hold down the container, and an angle member projecting upwardly from the horizontal position of the arm to receive the bottom corners of the upwardly adjacent container and retain it against lateral displacement.

3,680,519

SAIL AND METHOD OF CONSTRUCTION

Domina C. Jalbert, 170 N.W. 20th St., Boca Raton, Fla.

Filed Aug. 11, 1970, Ser. No. 62,958
Int. Cl. B63h 9/04
U.S. Cl. 114—103 25 Claims



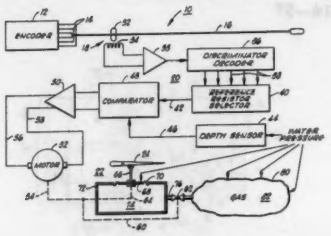
A sail and its construction is shown wherein the sail is formed by a plurality of triangular panels each with an apex or tip located at the tack of the sail. The panels are formed of predetermined shape having contoured edges formed to provide a built-in pocket.

3,680,520

APPARATUS FOR CONTROLLING DEPTH OF A WATER-TOWED CABLE

Bill Smith, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Sept. 25, 1970, Ser. No. 75,387
Int. Cl. B63b 21/00
U.S. Cl. 114—235 B 2 Claims



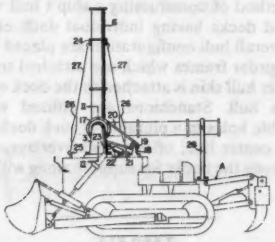
Apparatus for controlling the depth of water-towed cables such as marine seismic cables, such apparatus being remotely controllable to run at a predetermined depth under regulation of hydrostatic pressure responsive mechanism. The apparatus consists of electrical transmission and reception circuitry operating in conjunction with the seismic cable, and being capable of controlling depth regulating mechanism to operate at one of a plurality of selected depths. The depth regulating mechanism includes first and second coacting pressure regulator devices, the first regulator device being a regulatory mechanism for varying the diving planes in accordance with the differential between the ambient hydrostatic pressure and a pre-set volume of gas under selected pressure, the second device functioning as a servo-follower mechanism to select and control the amount of gas pressure within said pre-set volume at the specified depth.

3,680,521

DUCT FOR AMPHIBIAN VEHICLE

Kiichi Muraki, Hirakata, and Tadashi Yoda, Neyagawa, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed April 26, 1971, Ser. No. 137,341
Claims priority, application Japan, April 24, 1970, 45/34684; April 24, 1970, 45/34685
Int. Cl. B64j 2/06
U.S. Cl. 115—1 R 6 Claims

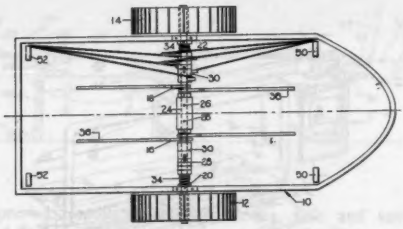


The present invention relates to a duct for amphibian vehicle which is characterized by providing the fixed air-suction pipe and fixed waste gas exhaustion pipe on the engine room of the vehicle in such a manner that said fixed air suction pipe and the fixed waste gas exhaustion pipe can be projected out; rotatably connecting, water tightly, the duct on the outer peripheries of said fixed air suction pipe and fixed waste gas exhaustion pipe; and providing movable air suction pipe and movable waste gas exhaustion pipe within said duct; and rotatably connecting said fixed and movable air suction pipes and said fixed and movable waste gas exhaustion pipes.

3,680,522
WATERCRAFT DRIVE MECHANISM

Wallace Clark, 1830 S. German Church Road, Indianapolis, Ind., and James L. Teeters, 2115 Bryan Ave., Lot C-9, Panama City, Fla.

Filed Dec. 4, 1970, Ser. No. 95,166
Int. Cl. B63h *16/08*
U.S. Cl. 115—23 8 Claims

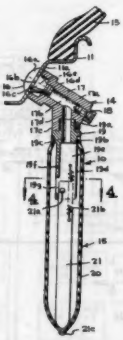


Occupant actuated drive mechanism for watercraft having a rotary propulsion shaft including a driven shaft carrying a series of over-running clutches, a crank arm for each over-running clutch, a pivotal, arm actuated lever, and connecting rods extending between the lever and the crank arms. The clutches, connecting rods and pivotal levers can be arranged to provide a driving force on each stroke of the pivotal lever, and to provide for driving forces in both directions.

3,680,523
PRESSURE INDICATOR

Thomas Gaskins, Palmdale, Fla.

Filed Oct. 28, 1970, Ser. No. 84,606
Int. Cl. B60c *23/06*
U.S. Cl. 116—34 R 3 Claims

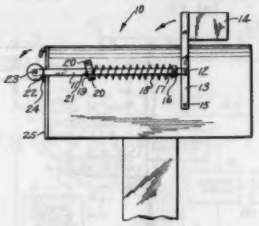


A pressure indicator suitable for use with a device containing a fluid under pressure generally consisting of a movable means including a chamber communicable with the fluid under pressure, operable responsive to a predetermined pressure within the chamber for urging the movable means into a predetermined orientation, and biasing means cooperable with the movable means for urging the movable means out of the predetermined orientation when the pressure in the chamber is below the predetermined pressure.

3,680,524
MAILBOX FLAG-TRIP MECHANISM

James L. Korinek, Ulysses, Nebr., and Dennis J. Korinek, 9810 Louis Drive, Omaha, Nebr.

Filed Dec. 28, 1970, Ser. No. 101,831
Int. Cl. G08c *5/00*
U.S. Cl. 116—132 1 Claim

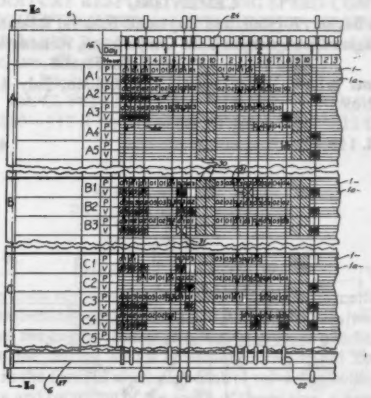


A device for rural type mailboxes. This device includes a rod actuated flag member which engages a fixed latch member on the mailbox until a roller at one end of the rod is lifted by a bar secured to the mailbox cover.

3,680,525
PROGRAM DISPLAY DEVICE

Arthur Berge, Wennerbergsgatan 6, Stockholm, Sweden

Continuation of Ser. No. 577,108, Aug. 29, 1966, abandoned.
This application Aug. 26, 1970, Ser. No. 66,624
Int. Cl. G09f *9/00*
U.S. Cl. 116—135 9 Claims

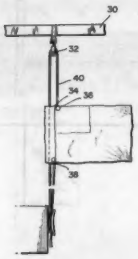


A program and its progress are displayed on a rectangular display board. The program is constituted by at least three program factors and one of these factors is common to all the other factors. A plurality of tracks on the board extend parallel to one coordinate axis and each track carries slidable indicators displaying indicia indicating an interrelationship between the other program factors, with each track associated with one such other program factor. There is a display of sequentially arranged indicia indicating units of the one program factor, with the units defining a dimension parallel to the coordinate axis perpendicular to the one axis. Each indicator is of the same width as each unit for alignment with a respective unit along a respective perpendicular axis. A plurality of elongated indexing members are positionable on the board across the tracks in alignment with selected units.

3,680,526
TANGLE FREE FLAG RIGGING

Albert G. Buffington, Jr., P.O. Box 96, New York, N.Y.

Filed Oct. 7, 1970, Ser. No. 78,868
Int. Cl. G09f *17/00*
U.S. Cl. 116—174 1 Claim

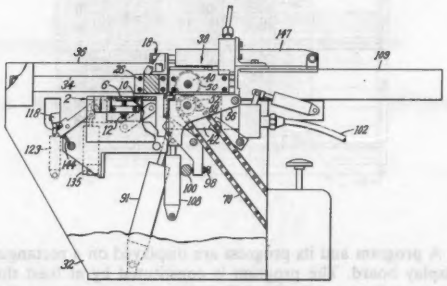


A flagpole having a pulley at its top is provided with a tube in surrounding relation therewith. Swivels are located at the top and bottom of the tube and rotatably support said tube with a flag being secured to the tube. A halyard is secured to the upper swivel, passes over the pulley, descends through the tube and is then secured to the lower swivel. Since the halyard is received within the tube the flag cannot become entangled therewith and when wind is directed at the flag the flag and tube rotate relative to the swivels thus preventing the flag from wrapping around the pole.

3,680,527
APPARATUS FOR OVERALL SOLE AND HEEL UNIT CEMENTING

Joseph Barker, Birstall, and Raymond Hanson, Rearsby, both of England, assignors to USM Corporation, Flemington, N.J.

Filed July 1, 1970, Ser. No. 51,608
Claims priority, application Great Britain, July 4, 1969, 33,812/69
Int. Cl. B05c *11/00*
U.S. Cl. 118—7 4 Claims

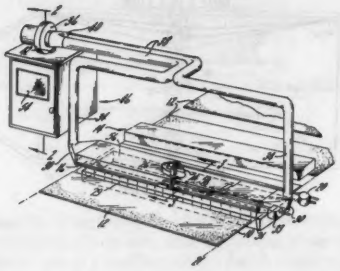


This invention relates to apparatus for over-all cementing of a shoe sole and heel unit to prepare the unit for bonding to the bottom of a lasted shoe. The unit is supported in the machine with the top surface to which adhesive is to be applied substantially planar. A heating element is then passed over the unit to prepare the unit for receiving the adhesive. An adhesive applicator then passes over the unit to apply adhesive to the entire top surface of the unit. The adhesive is then again heated by again passing the heating element over the unit. Automatic means are provided to control the operation of the apparatus.

3,680,528
APPARATUS FOR POWDER REMOVAL

Robert C. Sanders, Syracuse, N.Y., assignor to Oxy-Dry Sprayer Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 811,381, March 28, 1969, abandoned. This application April 1, 1970, Ser. No. 24,523
Int. Cl. C23c *13/08*
U.S. Cl. 118—50 13 Claims

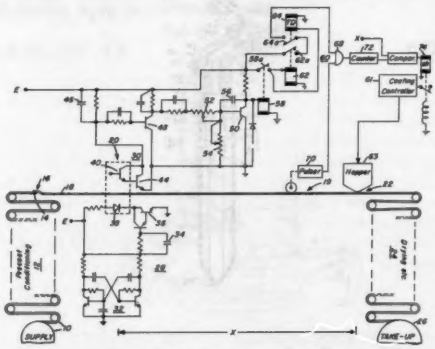


An apparatus for removing excess, airborne powder following the application of a powder material to a moving surface such as a web or sheet wherein a manifold is positioned downstream of the powder application to entrap the airborne powder and the collected powder is removed by the combined action of a fluid stream to move the powder towards the ends of the manifold and a gentle vacuum adjacent the manifold ends to exhaust the powder to, for example, an exhaust trap, and methods for removing excess, airborne powder.

3,680,529
SYSTEM FOR SELECTIVELY COATING WEBS

Richard H. Francis, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed March 4, 1971, Ser. No. 120,931
Int. Cl. B05c *11/00*
U.S. Cl. 118—8 9 Claims

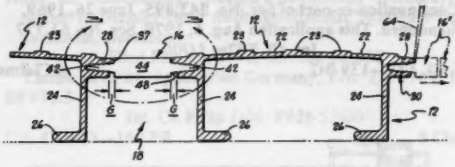


Apparatus is disclosed for applying a coating, or the like, to one part of a web which is formed of spliced-together parts. Each web part has a different light transmission quality; and a splice detector produces pulses, the widths of which are characteristic of such transmissions. A pulse width discrimination circuit detects pulses wider than a given amount; and when a splice passes the detector, causing a pulse-width change, coating is effected. A circuit is provided for distinguishing between different kinds of splices.

3,680,530
SLOTTED FLOORING

Ronald H. Drawsky, Walnut Creek, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Jan. 29, 1971, Ser. No. 111,021
Int. Cl. A01k *01/00*
U.S. Cl. 119—28 11 Claims

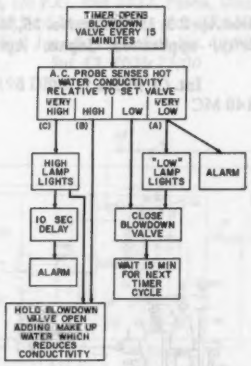


Improved, readily installable, strong, safe and sanitary slotted flooring for animal enclosures and the like generally comprised of channel shaped beams mounted on a support and a removable clip interconnected to adjacent channel-shaped beams for holding the beams in spaced relationship. Each beam has a longitudinally extending, outwardly opening grooved portion in each side wall and adjacent the top of the beam. The clip mates with, and removably fits within, the grooved portions of adjacent beams so as to hold beams apart. The clip is longitudinally shiftable with respect to the beams so as to define a waste discharge opening of adjustable size therebetween whereby the flooring can be readily cleaned of waste, debris, etc., with minimal disturbance of the animals occupying the enclosures.

3,680,531
AUTOMATIC BOILER BLOWDOWN CONTROL

Donald H. Holdt, Cambridge, Md., assignor to Chemed Corporation, Cincinnati, Ohio

Filed April 22, 1971, Ser. No. 136,369
Int. Cl. F22b *37/54*
U.S. Cl. 122—379 5 Claims

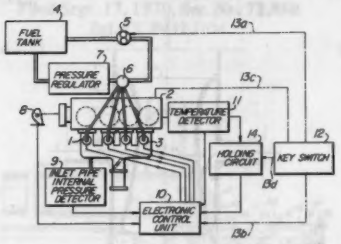


A system for the control of solutes and suspended solids in boiler water which periodically samples the conductivity of boiler water in a cell located outside of the boiler walls. High conductivity opens the blow-down valve and allows fresh feed to enter until the conductivity drops to pre-determined levels. Low conductivity, usually indicating leaks and wasted boiler water, activates an alarm.

3,680,532
STARTING FUEL FEED SYSTEM FOR THE FUEL INJECTION OF AN INTERNAL COMBUSTION ENGINE

Norio Omori, Kariya, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Feb. 12, 1970, Ser. No. 10,798
Claims priority, application Japan, Feb. 15, 1969, 44/11401
Int. Cl. F02b *3/00*; F02n *17/00*
U.S. Cl. 123—32 EA 1 Claim

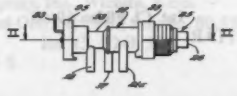


A very useful starting fuel feed system capable of easily and reliably starting an internal combustion engine, the system being so constructed that the temperature conditions of the internal combustion engine prior to its starting as represented by the temperature of the engine cylinder wall or the cooling water is detected by means of a thermistor or a cold conductor, and that, almost simultaneously only with the actuation of a starting switch or only at the instant a starting motor starts rotating, an electrical pulse is applied to each injection valve whose pulse duration is sufficient to satisfy the required quantity of fuel for starting the engine under the said detected temperature conditions.

3,680,533
TEMPERATURE RESPONSIVE IDLING SPEED CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

George Soberski, Des Plaines, Ill., assignor to Eaton Yale & Towne, Inc., Cleveland, Ohio

Filed Oct. 15, 1970, Ser. No. 81,086
Int. Cl. F02p *5/04*; F01p *5/14*; F02m *23/04*
U.S. Cl. 123—117 R 12 Claims

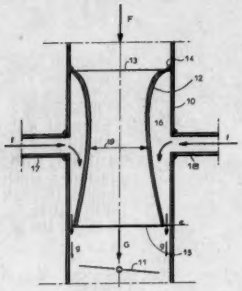


Temperature responsive idling speed control device for internal combustion engine arranged to reduce the noxious gases when the engine runs at idle, and to prevent overheating of the engine during idling conditions. The speed control device is in the form of a vacuum control valve controlling the advancing and retarding of the spark of the engine, a normally closed switch and a solenoid energized through the switch, controlling the position of the butterfly valve of the carburetor for the engine during idling conditions. The switch is a part of the vacuum control valve and is operated by a thermally responsive element in direct association with the water jacket of the engine. When the switch is closed during normal idling conditions with the spark retarded, the solenoid is energized to hold the butterfly valve open a slight amount. As the temperature of the engine rises sufficiently to cause overheating of the engine during idling, the vacuum control valve is moved to connect the automatic spark advance to manifold vacuum, and advance the spark to increase engine speed. The temperature rise operating the vacuum control valve also opens the switch to deenergize the solenoid and accommodate the butterfly valve to close and prevent excessive engine speed when the engine is running hot with the spark advanced.

3,680,534
DEVICE FOR THE INJECTION OF GASES INTO THE FEED SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Claude Chavant, Issy-Les Moulineaux, France, assignor to Chrysler France

Filed March 30, 1970, Ser. No. 23,835
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **7 Claims**

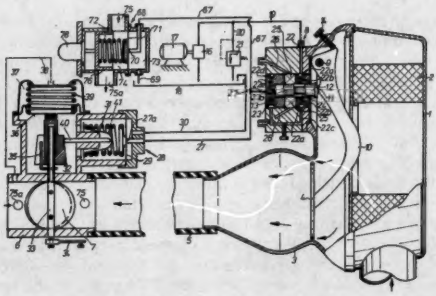


A device for the injection of secondary gases into the conduit for the intake of the gaseous fuel mixture of an internal combustion engine, comprising a nozzle mounted in said conduit the upstream mouth of which joins the said conduit in which it fits, and the downstream mouth of which is located in the said conduit with a certain clearance, forming a free annular space between said nozzle and said conduit, and duct for the supply of the said secondary gases, opening into said annular space, and communicating with a supply source of said secondary gases.

3,680,535
FUEL INJECTION SYSTEM FOR COMBUSTION ENGINES

Konrad Eckert, Stuttgart-Bad Cannstatt; Heinrich Knapp, Leonberg-Silberberg; Reinhard Schwartz, Stuttgart-Sillenbuch, and Gregor Schuster, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 16, 1970, Ser. No. 81,221
Claims priority, application Germany, Dec. 1, 1969, P 19 60 144.6
Int. Cl. F02m *69/00*
U.S. Cl. 123—119 R **21 Claims**

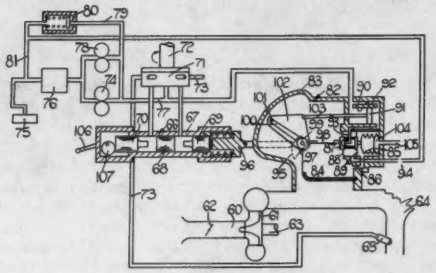


In an external-ignition combustion engine operating with compression of the fuel mixture and continuous injection into the suction duct fuel is measured off by a valve by means of a slider actuated by a suction-responsive plate against a return force provided by fuel pressure and subject to control in dependence on operating characteristics of the engine. A pressure-control valve may be subject to a spring bias which is varied by a surface cam in response to throttle position and to pressure downstream of the throttle in the suction duct. A further control in response to engine temperature may be provided.

3,680,536
FUEL SPRAY SYSTEM FOR INTERNAL COMBUSTION ENGINES

Roger Clark, Dunelm, Dene Rd., Ashted, England

Continuation-in-part of Ser. No. 843,895, June 26, 1969, abandoned. This application Aug. 6, 1970, Ser. No. 61,777
Int. Cl. F02m *31/00*
U.S. Cl. 123—139 BG **4 Claims**

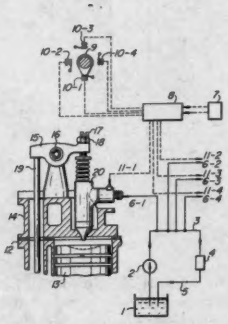


A fuel spray system for a piston and cylinder-type internal combustion engine, particularly an aircraft engine provided with a throttled inlet manifold, a pump for supplying liquid fuel to a plurality of nozzles in the manifold, a device including means responsive to manifold pressure and means responsive to manifold temperature for controlling a fuel metering unit whereby the fuel flow to the nozzles is controlled.

3,680,537
FUEL SUPPLY DEVICE FOR INTERNAL COMBUSTION ENGINES

Toshi Suda, Nagoya, and Hisanori Kobayashi, Kariya, both of Japan, assignors to Nippondenso Kabushiki Kaisha, Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed April 3, 1970, Ser. No. 25,368
Claims priority, application Japan, April 17, 1969, 44/29936
Int. Cl. F02m *51/00*
U.S. Cl. 123—140 MC **7 Claims**



A fuel supply device for use in an internal combustion engine, which is so designed that the period of supplying fuel into a fuel injecting unit and the quantity of fuel to be injected into

a cylinder are determined by the period of energization of an electromagnetically operated valve which period is determined on the basis of various factors of the engine electrically detected by a detector, and the fuel injecting unit is imparted with the function of a pump to compress and pressurize the fuel supplied thereinto to be injected into a cylinder thereby.

3,680,538

SPARK PLUG FOR INTERNAL COMBUSTION ENGINES

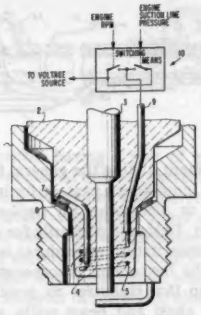
Hans O. Scherenberg, Stuttgart-Heumaden, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Feb. 19, 1970, Ser. No. 12,632

Claims priority, application Germany, Feb. 22, 1969, P 19 08 971.5

Int. Cl. F02p *1/00*; F02b *53/00*

U.S. Cl. 123—169 PB **8 Claims**



A spark plug for an internal combustion engine, especially for rotary piston internal combustion engines of trochoidal construction, in which the end of the insulating body surrounding the center electrode which faces ignition, is adapted to be heated to achieve self-cleaning under all operating conditions.

3,680,539

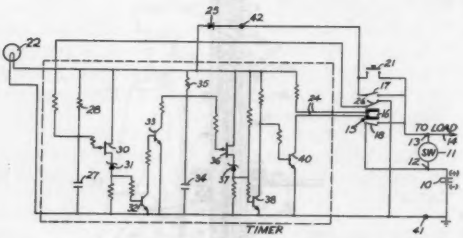
TIME DELAY CONTROL

Paul E. Savage, c/o P.O. Box 2422, Pasco, Wash., and Paul D. Sperline, 1208 Neel Loop, Kennewick, Wash.

Filed June 8, 1970, Ser. No. 43,993

Int. Cl. F02b *77/00*

U.S. Cl. 123—198 DB **8 Claims**



A time-delay control for applications such as operation of an internal combustion engine, where continued idle operation of the engine is desired after removal of the key from the usual controlling switch. A manually operated switch is connected between the load side of the controlled switch and a timed electrical relay for selectively energizing the relay while the engine is operating. The relay includes contacts in parallel with the manually operated switch and contacts in parallel with the controlled switch. The relay continues engine operation for a re-set time, during which the key may be removed. At the conclusion of this period, the relay is de-energized and the engine is automatically shut down.

3,680,540

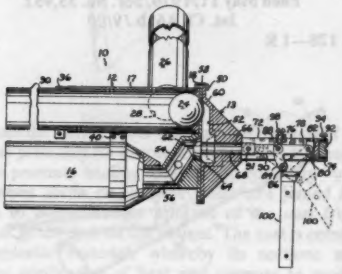
GOLF BALL GUN WITH VALVE ADJUSTMENT AND TRIGGER LINKAGE

Stephen Stengl, 6317 S. Broadway Dr., Oklahoma City, Okla.

Filed Sept. 17, 1970, Ser. No. 72,958

Int. Cl. F41f *1/04*

U.S. Cl. 124—11 **1 Claim**



A ball holding magazine is connected with a gun barrel containing one ball in firing position. A housing supports the gun barrel and forms an air chamber, communicating with the ball to be fired, which communicates by an air passageway, with a reservoir containing air under pressure. A trigger operated valve, connected with the housing, opens the air passageway for applying reservoir pressure to the ball for firing. Minor adjustments may be made to the seating of the valve by the movement of a threaded nut, wherein the nut acts on the valve through an intermediate guide and linkage system. The linkage system also serves to connect the valve to a trigger handle.

3,680,541

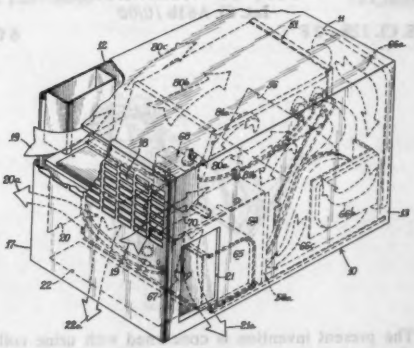
FURNACE CONSTRUCTION WITH SLIDABLE CARRIAGE

Bernard G. Honaker, Jr., Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Oct. 14, 1970, Ser. No. 80,554

Int. Cl. F24h *3/02*

U.S. Cl. 126—85 B **4 Claims**



In a sealed-combustion furnace an outer casing is provided with a combustion air intake duct and an exhaust flue both communicating through the wall. A removeable carriage as-

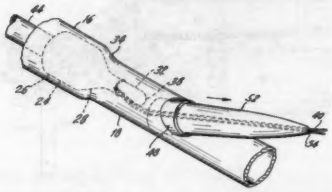
sembly is slidably received in the housing. A sheet metal shell is mounted on the carriage for dividing the interior of the casing into two compartments—one for receiving room air for heating and the other providing the heating chamber. A room air blower, a combustion air blower, a combustion chamber and the heat exchanger are all mounted on the carriage and removeable therewith. The combustion air blower receives outside air from the intake duct and forces it into the combustion chamber.

3,680,542

DEVICE FOR OCCLUSION OF AN OVIDUCT

Hugo S. Cimber, 22 Seven Gables Rd., Staten Island, N.Y.

Filed May 11, 1970, Ser. No. 35,952
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R **19 Claims**



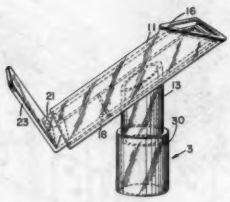
An occluding member, for being lodged in an oviduct where it narrows, e.g. at the junction between the ampulla and the isthmus, includes a tapered base portion and a narrowed forward portion. A suture attached to the occluding member is passed through an opening in the wall of the oviduct and is wrapped about the oviduct to occlude its walls against the forward portion of the occluding member. For inserting the occluding member, a separable rod passes the member through the inlet of the oviduct until it is lodged. Over the forward portion of the occluding member is temporarily positioned a suture guide, which holds the suture forward of the occluding member forward portion during positioning the occluding member and forms the opening in the wall of the oviduct. After the suture is drawn out of the oviduct through the opening in its wall, the suture guide is removed through the same opening in the oviduct wall.

3,680,543

URINE COLLECTION DEVICE

Michael C. L. Cox, Folkstone, England, assignor to The Gillette Company, Boston, Mass.

Filed July 2, 1970, Ser. No. 51,889
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 F **6 Claims**



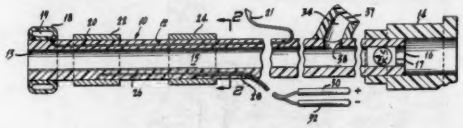
The present invention is concerned with urine collection devices which are especially convenient for taking mid-stream specimens from females. Generally, the devices comprise an outer tube and an inner tube which is slidably movable within the outer tube between first and second positions; the outer tube having one end contoured and dimensioned for engaging the forward area of the genitalia and surrounding the urethra and having a drainage outlet intermediate its ends and the inner tube acting as a fluid control means whereby in the first position the drainage outlet is blocked and in the second position the drainage outlet is open so that a specimen may be collected.

3,680,544

TRANSTHORACIC CANNULA-TYPE DEVICE FOR CARDIOPULMONARY RESUSCITATION

James P. Shinnick, Pickwick Village, Apts. J-15, Maple Shade, N.J., and James F. Conroy, 1814 Wynnewood Rd., Philadelphia, Pa.

Filed Sept. 9, 1970, Ser. No. 70,658
Int. Cl. A61b *5/02*; A61m *25/00*; A61n *1/34*
U.S. Cl. 128—2 R **8 Claims**



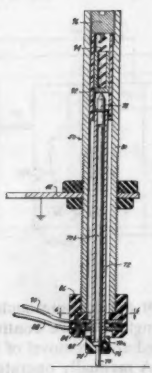
A medical instrument, taking the general form of a flexible catheter or cannula, combines a passage for intracardiac drugs with an electrode or electrodes for applying an electrical stimulus to the heart. Designed primarily for use in emergency cardiopulmonary resuscitation procedures instituted in cases of cardiac arrest, the instrument incorporates an expansible stop collar at its tip that stabilizes its position following its penetration of the chest and heart walls, and in particular prevents accidental withdrawal or escape thereof. The stably positioned instrument affords the opportunity for external cardiac heart massage without danger of heart damage resulting from motion of the instrument that would normally occur if an instrument of this type is not removed during said external cardiac massage of the heart muscle.

3,680,545

ELECTRO-MECHANICAL READER FOR INTERPRETING THE NEUROLOGICAL QUOTIENT OF A SUBJECT

Richard H. Miller, Berwyn, Pa., assignor to Trimil Corporation, Ambler, Pa.

Filed April 9, 1969, Ser. No. 815,282
Int. Cl. A61b *5/16*
U.S. Cl. 128—2 N **1 Claim**



A low inertia, high sensitivity apparatus for sensing and recording variations in the direction of motion thereof and for registering an indication of the variation in direction to

thereby serve as a measure of the degree of motor control ability of a subject, the apparatus having a follower including make-and-break electrical circuitry to record positive indications of deviations in direction which exceed a predetermined value.

3,680,546
ILLUMINATED SURGICAL RETRACTOR
Manfred Asrican, Greenwich, Conn., assignor to Instrumentation for Medicine Inc., Greenwich, Conn.
Filed Oct. 30, 1970, Ser. No. 85,340
Int. Cl. A61b *1/06*; G02b *5/16*
U.S. Cl. 128—18 3 Claims

A surgical retractor having a pair of elongated members mutually interconnected at one end thereof for relative movement, and mounting at a second end thereof opposing retracting members adapted to engage the upper and lower eyelids of a patient. A fiber optic light-transmitting cable is interconnected at one end thereof to a light source, and interconnects with a pair of smaller fiber optic cables which extend over and are supported by said pair of retracting elements. Each of said pair of smaller cables bifurcates to provide a pair of still smaller cables, the free ends of which are positioned to lie upon a surface of a retracting member, whereby light rays emanating from said free ends are directed by adjustment of the retracting members with respect to the elongated members. A second fiber optic cable includes means for mounting the free end thereof in the vicinity of said retracting members to provide external illumination to the body cavity being retracted.

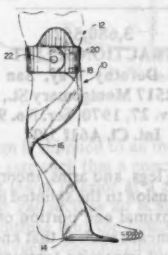
3,680,547
HYDROMASSAGE DEVICE
Stuart P. Higgs, 11555 Sylan 05, North Hollywood, Calif.
Filed May 10, 1971, Ser. No. 141,860
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 10 Claims

A hydromassage device which can be secured against the back of a person to deflect the spray of a shower against the person's back with a massaging action. The device includes a baffle having a concavely curved forward edge for application to the person's back and a deflection surface extending rearwardly from the forward edge. The baffle is carried by a pair of shoulder and/or waist supports.

3,680,548
METHOD OF USING PLASTIC CAST
John D. Brown, 21046 Cloverland Dr., Covina, Calif.
Continuation-in-part of Ser. No. 555,790, June 7, 1966, abandoned. This application May 26, 1969, Ser. No. 865,540
Int. Cl. A61f *5/00*
U.S. Cl. 128—69 8 Claims

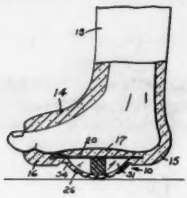
An orthopedic correctional cast and the method of providing the same primarily for correction of orthopedic abnormalities, and to promote healing of damaged bone structure. The cast comprises shells or sections which are joined in such manner as to accommodate removal of the cast from and replacement of the cast on the patient. The cast is constructed of thermoplastic material, whereby its sections may be replaced by application of heat and pressure to modify the correctional pressures applied to selected areas of a patient's body to effect orthopedic correction of abnormalities of bone structure or promote correct healing of damaged structure. The cast is fabricated by forming a pair of mating, relatively rigid matrices each having an open cavity generally conforming to approximately one-half of the body portion, then forming a shell of thermoplastic material within the conforming to each matrix cavity. After the abnormal portion of the patient's body has been encased in the cast for a period of time during which the abnormality has been partially corrected, the plastic shells are detached and the cast removed, then heat and pressure are applied to reshape selected localized areas of one or both plastic shells to apply modified correctional pressures to the partially corrected abnormality when the cast is replaced on the patient.

3,680,549
SPIRAL ORTHOSIS FOR THE LOWER EXTREMITY
Hans R. Lehneis, Merrick, and Jack D. Pounders, Edgewater, both of N.Y., assignors to Research Corporation, New York, N.Y.
Filed May 8, 1970, Ser. No. 35,626
Int. Cl. A61f *3/00*
U.S. Cl. 128—80 E 10 Claims



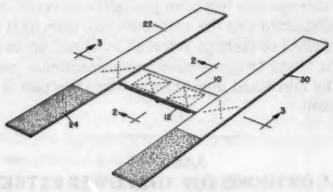
An orthosis device for the lower extremity having a footplate and a horizontal calf-encircling band interconnected by a spiral portion extending from the medial side of the plate, posteriorly around the leg to terminate at the level of the medial tibial condyle.

3,680,550
SOLE FOR WALKING CAST
Don M. Tunstall, 1016 Larson Bldg., Yakima, Wash.
Filed Sept. 4, 1970, Ser. No. 69,734
Int. Cl. A61f 5/04
U.S. Cl. 128—83.5 8 Claims



A sole for a walking cast is described having a base plate embedded in the cast with a flexible convex shaped leaf spring attached to the base plate which is deflected to absorb the shock of the cast striking the ground and to deflect with the increasing application of the patient's weight. A resilient element is positioned between the base plate and the spring to limit the deflection according to the weight of the patient.

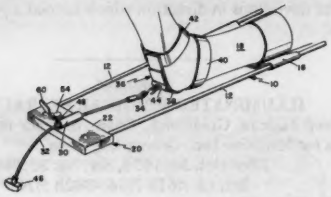
3,680,551
ANKLE HITCH
Oran M. Bell, 5623 Dorothy Way, San Diego, Calif., and Joseph J. Walker, 2517 Montgomery St., Cardiff, Calif.
Filed Nov. 27, 1970, Ser. No. 93,031
Int. Cl. A61f 5/04
U.S. Cl. 128—84 R 2 Claims



An ankle hitch for use by ambulance operators, doctors and others whenever it is required to place a leg under traction, the hitch providing for quick and easy attachment of the tensioning means to the ankle and foot of the injured leg. The hitch also avoids twisting or pulling the forward part of the foot into an unnatural position.

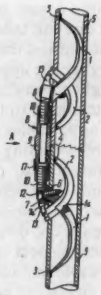
3,680,552
TRACTION SPLINT
Oran M. Bell, 5623 Dorothy Way, San Diego, Calif., and Joseph J. Walker, 2517 Montgomery St., Cardiff, Calif.
Filed Nov. 27, 1970, Ser. No. 93,030
Int. Cl. A61f 5/04
U.S. Cl. 128—84 C 4 Claims

A splint for broken legs, and arms, incorporating simplified means for applying tension to the splinted limb. The splint will be secured to the proximal end portion of the injured leg or arm by conventional means such as that known as the Thomas half ring and straps but improved tensioning means is incorporated with the outer end of the splint for ultimate simplicity in construction as well as operation which is reflected in speedier and more efficient procedural use. End plate structure in the form of a simple casing snaps onto the outer end of the cradle portion of the splint but is easily removed for cleaning. A manually tensioned cable is routed through a cable guide on the casing thus assuring, a straight-line pull in the general plane of the cradle, even though applied manually,



and automatic locking of the cable and quick release of tension when necessary is incorporated with the cable guide.

3,680,553
FIXING APPARATUS FOR OSTEOSYNTHESIS OF FRACTURES OF LONG TUBULAR BONES
Arnold Ivanovich Seppo, Tallin, U.S.S.R., assignor to Tallinskaya bolnitsa Tynismyae, Tallin, U.S.S.R.
Filed Dec. 7, 1970, Ser. No. 95,791
Int. Cl. A61f 5/04
U.S. Cl. 128—92 BC 5 Claims

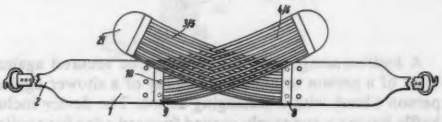


A fixing apparatus for the osteosynthesis of fractures of long tubular bones in which two pairs of interconnected curved rods have the free ends of each pair being directed to the opposite sides.

Each pair of the rods is intended for introduction into one of the bone fragments so that the free ends of the rods and the middle portion of one of the rods must rest on the compact layer within the wall of the bone tube at the opposite sides.

The pairs of the rods are interconnected through a coupling allowing the distance between the pairs of the rods and their position to be forcibly changed and fixed.

3,680,554
DEVICE FOR RETAINING A PERSON ON A SUPPORT
Jose Humberto Giraldez Sanchez, Am Rathenaupark 3,2000, Hamburg-Othmarschen, Germany
Filed Feb. 10, 1970, Ser. No. 10,220
Claims priority, application Germany, Feb. 13, 1969, G 69 05 566; Aug. 11, 1969, G 69 31 677; Oct. 25, 1969, P 19 53 842.2
Int. Cl. A61f 13/00
U.S. Cl. 128—134 1 Claim



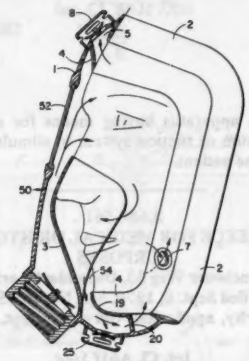
A device for retaining a person on a support such as a bed,

couch, stretcher, table and the like, comprising an inner bandage system attached to the body of the person and an outer bandage system attached to the support and mutually interconnected so that the body has a limited degree of freedom of movement.

3,680,555
PROTECTIVE MASK WITH ANNULAR FLUSHING CHAMBER

Ernst Warncke, Lubeck, Germany, assignor to Dragerwerk Aktiengesellschaft, Lubeck, Germany

Filed March 13, 1970, Ser. No. 19,308
Claims priority, application Germany, March 20, 1969, P 19 14 224.6
Int. Cl. A61f 9/06
U.S. Cl. 128—141 R **3 Claims**



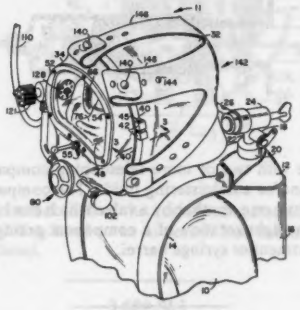
A protective mask includes a double sealing rim or frame which defines a passageway for exhaled air which extends around the periphery of the face of the wearer to a space, for example, defined at the forehead of the wearer having an exhalation valve permitting the controlled discharge thereof. The mask is advantageously of a type which includes an outer mask portion or wall having a viewing window and an inner mask portion or wall which engages above the nose of the wearer and extends downwardly in spaced relationship from the cheeks and mouth of the wearer and defines together with a chin pocket a separate exhalation passageway which communicates with the annular passage defined around the frame of the mask. A space at the bottom of the mask between the two wall portions is provided with an inlet valve for inhaling air which moves between the space defined between the inner and outer mask walls. An exhalation valve may be positioned at the location of an opening between the exhalation space defined by the inner mask wall and the annular space of the frame leading to the discharge opening. The valve may also be located at the discharge opening itself. The exhalation valve includes a very small valve seat and a large effective pressure-sensitive area which is defined by a membrane or diaphragm. The forces which result from the accumulation of water at the valve seat are reduced due to the relatively small size of the valve seat and the opening forces are amplified because the membrane surface and thus the pressure effective surface is relatively large.

3,680,556
DIVING HELMET

Bevly Boone Morgan, Santa Barbara, Calif., assignor to U.S. Divers Co.

Filed Oct. 22, 1969, Ser. No. 868,324
Int. Cl. A62b 7/04
U.S. Cl. 128—142.2 **17 Claims**

A diving helmet comprising a plastic or elastomeric hood having open cellular foam for conformance to a diver's lateral facial configuration, and connected to a rigid shell having a viewing port, the shell being connected to the hood by a split band circumscribing the shell overlying a flange of the hood, the band having a plurality of projections which cooperate with an elastomeric spider to maintain the helmet in secured relationship on a diver's head. The shell has an adjustable

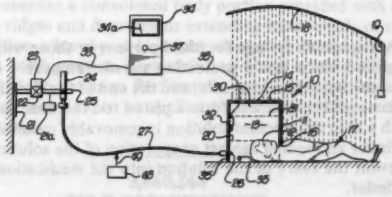


breathing gas demand regulator, and a second breathing gas source in the form of a valve that serves the function of introducing gas directly into the mask on a controlled basis, as well as providing for the introduction of emergency breathing gas into the helmet; the shell having a valve port for exhausting gases introduced in the foregoing manner, and any water residing in the shell.

3,680,557
CONTROLLED ATMOSPHERE INCUBATOR SYSTEM WITH OXYGEN PROBE

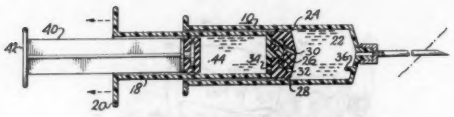
Thaddeus M. Doniguian, Laguna Beach, Calif., assignor to I.M.I., Division of Becton, Dickinson and Company, Newport Beach, Calif.

Filed May 6, 1970, Ser. No. 35,026
Int. Cl. A61m 16/02
U.S. Cl. 128—185 **7 Claims**



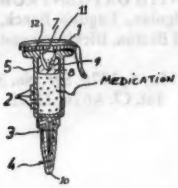
An oxygen stream is supplied to an incubation hood for diffusion therein at a rate such that a concentrated oxygen layer forms in the hood lower interior at a zone about a patient's head; displacement gas such as air is admitted into the hood upper interior to diffuse into the concentrated oxygen layer for reducing the oxygen concentration at the zone about the patient's head, and to effect exhausting from the hood of downwardly displaced gas containing breath expelled carbon dioxide; and the oxygen supply is controlled in response to sensing of the oxygen concentration in the hood to maintain within a predetermined range the oxygen concentration at that zone.

3,680,558
SYRINGE WITH MULTIPLE COMPARTMENTS
Robert F. Kapelowitz, 5652 132nd N.E., Seattle, Wash.
Filed May 27, 1970, Ser. No. 40,796
Int. Cl. A61m 5/00
U.S. Cl. 128—218 M 3 Claims



A syringe with two or more telescoping compartments for collecting and/or administering fluids. The compartments are separated from one another by a valve which can be opened or closed upon slight rotation of a component acting as plunger and compartment or syringe barrel.

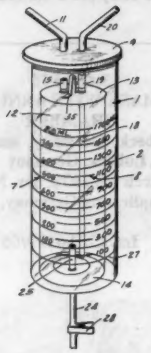
3,680,559
DISPOSABLE SYRINGE FOR THE BLIND
Fritz Gorbahn, Nordstrasse 16, 581 Witten, Germany
Filed May 20, 1970, Ser. No. 48,758
Claims priority, application Germany, May 24, 1969, G 69 18 563.3
Int. Cl. A61m 5/00
U.S. Cl. 128—220 5 Claims



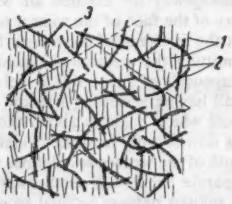
A disposable syringe for blind persons or those with greatly impaired vision has a protecting sheath removably mounted over the hypodermic needle, and the end of the sheath fits into a recess of the piston to form a piston rod thereon; and a swab with a skin disinfectant solution is removably mounted on the cylinder and sealed against evaporation of the solution and to prevent the entry of the solution into the medication holding cylinder.

3,680,560
VACUUM DRAINAGE COLLECTING APPARATUS WITH DISPOSABLE LINER
Karl A. Pannier, Jr.; Gordon S. Reynolds, and James L. Sorenson, all of Salt Lake City, Utah, assignors to Le Voy's Inc., Salt Lake City, Utah
Filed Nov. 26, 1968, Ser. No. 778,963
Int. Cl. A61f 5/44
U.S. Cl. 128—276 20 Claims

A collecting apparatus for drainage from the body of a patient after severe wounding of or surgery performed on the patient, embodying a canister and a disposable receiver for the drainage, such apparatus having means for connecting the same in a vacuum or suction system to stimulate drainage of the wound in the patient.

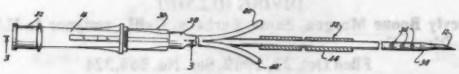


3,680,561
FIBER FLEECE FOR MEDICAL OR HYGIENICAL PURPOSES
Heinz Baron, Juchener Weg 33, Dusseldorf-Lorick, Germany
Filed Sept. 8, 1970, Ser. No. 70,051
Claims priority, application Germany, Sept. 9, 1969, P 19 45 581.3
Int. Cl. A61f 5/44
U.S. Cl. 128—296 9 Claims



There is disclosed a fiber fleece for medical or hygienical purpose, which is characterized by the fact that it is composed of fibers and overtwisted filaments and its binder content is so low that the overtwisted filaments change their twisting when being wetted by water.

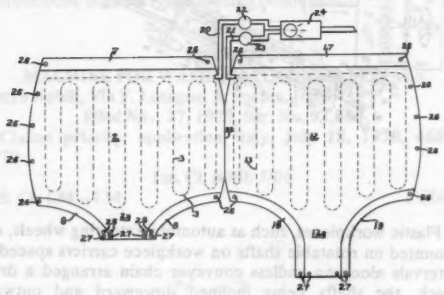
3,680,562
SURGICAL DRAINAGE APPARATUS FOR BLADDER
James M. Wittes, Linden, and Peter J., Bonanno, both of Tenafly, N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.
Filed April 26, 1971, Ser. No. 137,550
Int. Cl. A61b 17/34; A61m 25/00
U.S. Cl. 128—347 5 Claims



A surgical apparatus for delivering fluids to or withdrawing fluids from the bladder includes a catheter having an inwardly

curved, tapered blunt-tip with a series of longitudinally aligned ports spaced on the inside of the curve. A removable piercing element is disposed within the catheter having a beveled point extending beyond the end of the plastic tube. A pliant sheath, tightly fit over the catheter tube, is bifurcated at its distal end into half-tube branches which are adapted to be bent away from the catheter tube after introduction of the assembly into the body to anchor the apparatus to the skin. In order to provide further control over the position of the catheter tubing in the bladder the bifurcated anchoring wings are in a mutually perpendicular plane to the outlet ports.

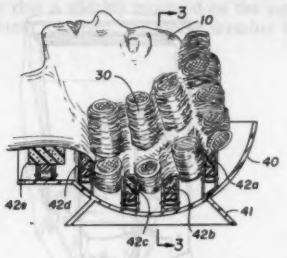
3,680,563
DUO HEATING PAD
Willie Mae Forrest, 1115 N. 12th St., Boise, Idaho
Filed Feb. 9, 1970, Ser. No. 9,532
Int. Cl. A61f 7/00
U.S. Cl. 128—402 **1 Claim**



A heat pad for the lower abdomen and back portions of the human body is made up with front and rear heating pad sections, each of a durable pliant inner layer of electrical insulation, such as a synthetic rubber, capable of withstanding heat of the order of that commonly employed in heat pads, and a cover layer of a durable fabric such as nylon cloth having some resiliency. Each section has a top waistband portion of elastic webbing and a bottom leg band portion of the same material separate from the corresponding webbing of the other section. The inner layer of each section has a heating element secured therein and extended throughout the inner layer except for crotch portions along the lower part of the section. The two sections are permanently secured to each other for a short distance along one of their side edges and have cooperating snap fasteners along their other side edges ad along their bottom edges. Double sets of fasteners are provided at the bottom edges for adjustment. The heater elements have current supply cords individual to each element and embodying individual switches. A heat control device governs the current supply to both cords which are connected in parallel to each other across the main current supply cord.

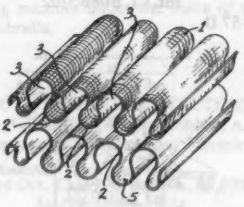
3,680,564
HAIR CURLER COMFORT REST
Thomas J. Parlagreco, 5 Ferris Court, Ho-Ho-Kus, N.J.
Filed Oct. 21, 1971, Ser. No. 191,446
Int. Cl. A45d 1/00
U.S. Cl. 132—9 **4 Claims**

A mechanism to enable a woman who is wearing hair curlers to lie comfortably in bed. The mechanism consists of an external shell, the interior of which consists of rib sections of cushioned material mounted on rollers, the sections of cushioned materials being so located as to serve as resting surfaces for the head, while the hair curlers occupy the space between adjacent rib sections of padded material. The mechanism permits relatively frictionless movement with rela-



tion to the external shell of the cushioned materials in contact with the reclining head so as to permit free rotational movement of the head.

3,680,565
HAIR REFORMING DEVICES
Harold Giles, and Marshall Noble, both of Vancouver, British Columbia, Canada, assignors to Wonder Curl Limited
Filed Oct. 22, 1969, Ser. No. 868,338
Claims priority, application Canada, Aug. 15, 1969, 059,609
Int. Cl. A45d 1/00
U.S. Cl. 132—9 **17 Claims**

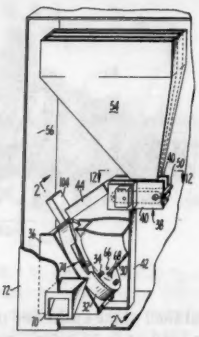


Devices are described for use in the re-forming of hair. The devices comprise a convoluted body portion provided with alternating ridges and depressions extending transversely of the body portion whereby at least one shaped surface having a wave-like configuration is provided to which a tress of hair may be made to conform. Perforations are provided to enable a hair treatment fluid to be applied to hair conforming to the shaped surface.

3,680,566
BULK COIN DISPENSER
Frederick K. Tanaka, Hayward; Fred S. Mueller, Sunnyvale, and John B. Riddle, Los Altos Hills, all of Calif., assignors to Micro-Magnetic Industries, Inc., Palo Alto, Calif.
Filed Sept. 22, 1969, Ser. No. 5,390
Int. Cl. G07d 3/14
U.S. Cl. 133—3 **15 Claims**

A method and apparatus for dispensing coins are disclosed where coins of mixed denomination are conveyed in a coin train from a reservoir toward a delivery station, and each coin is selectively diverted either to the delivery station or back to the reservoir depending upon whether or not that coin is needed to pay out a predetermined credit. Rotary disc and movable belt transports are disclosed for moving the coin train, either with a random mix of different denomination coins in the train or with the train made up of a sequence of

pockets designed to hold specific denomination coins. Electric and photoelectric devices are disclosed for sensing coin



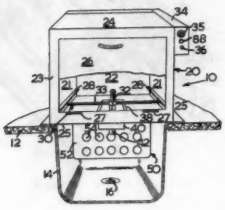
denominations, and several types of registers are disclosed for controlling the value and denomination mix of coins to be delivered.

3,680,567

PORTABLE TANKLESS GLASS WASHER

William A. Hansen, 95 Ashland Ave., Winnipeg 13, Manitoba, Canada

Filed April 28, 1971, Ser. No. 138,262
Int. Cl. B08b *3/02*
U.S. Cl. 134—57 D **10 Claims**



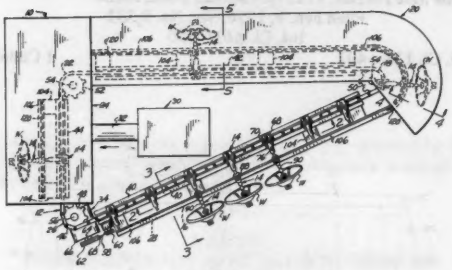
A portable tankless washing apparatus is described for washing glasses, dishes, ashtrays and other glassware, preferably automatically. The apparatus comprises a first compartment into which the glassware is introduced and subjected to a pressurized spray of wash solution derived from a rotatable spray head. A second compartment is secured to the first compartment and, in use, is intended to project into a conventional sink that has a drain and hot and cold water connections. The second compartment includes a sump which has outlet openings for selectively directing wash solution and rinse water to the sink and sink drain respectively. A level control device is provided within the sump to effect deflection of liquid in the manner desired, this device being operable in response to a difference in the level of wash solution in the sink. The sink serves as an integral part of wash washing apparatus during use, functioning as a holding tank for was solution. A submersible pump is supported in the second compartment and draws wash solution from the sink to supply the same to the spray head. It is preferable to provide a heater within said second compartment to maintain the wash solution at a predetermined temperature. It is also preferable to provide a control circuit which enables the the apparatus to function automatically through a wash cycle and a rinse cycle, with the addition of a wetting agent or sanitizing material being optional during the rinse cycle.

3,680,568

APPARATUS FOR DEFLASHING ANNULAR PALSTIC ARTICLES

Edgar T. James, and Dominic Magri, both of Windsor, Ontario, Canada, assignors to Swedish Crucible Steel Company, Detroit, Mich.

Filed Oct. 8, 1969, Ser. No. 864,618
Int. Cl. B29c *23/00*
U.S. Cl. 134—63 **3 Claims**



Plastic workpieces, such as automobile steering wheels, are mounted on rotatable shafts on workpiece carriers spaced at intervals along an endless conveyor chain arranged a drive track, the shafts being inclined downward and outward therefrom and the lower course of the conveyor chain extending adjacent a tank containing a plastic solvent solution. As the workpieces are carried into the tank, they are lowered into the solution by the combination of shaft angle and track angle, whereupon pulleys on the shafts engage the drive track and are rotated thereby together with the workpieces carried thereby as they move through and along the tank while the workpieces are partly immersed in the solution, so as to agitate it as they rotate and pass through it. From the tank, the workpiece carriers and workpieces are carried upward through an oven which rapidly evaporates the excess solvent that has not already been drawn off by the combined actions of surface tension and gravity. The plastic workpieces emerge dry, polished and free of flash from the oven and pass around a conveyor chain drive sprocket to an unloading station, immediately beyond which is a loading station for the next plastic workpieces to be processed.

3,680,569

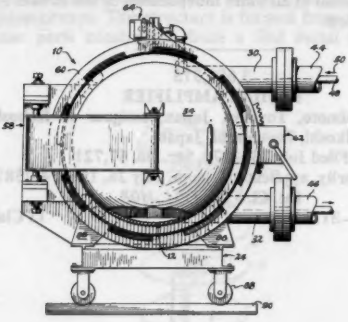
SHEAVED PRESSURE VESSEL UNIT

Henry J. Piegza, Clarence, N.Y., assignor to Welding & Steel Fabrication Co., Inc., Tonawanda, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,334
Int. Cl. B05c *3/15*; B65h *51/00, 54/00*
U.S. Cl. 134—64 **8 Claims**

A pressure vessel unit for use in doubling back a continuously advancing cable, tube, strand or the like, during a treating operation. The unit includes a vessel, which defines a generally horizontally disposed pressure chamber housing a freely rotatably or driven sheave to which access is afforded by a quick opening door; the vessel having cable run inlet and outlet fittings arranged tangentially of the peripheral guide surface of the sheave and inlet and outlet connections for admitting and/or bleeding cable treating fluid from the chamber. The arrangement provides for the establishing of a liquid-gas interface within the chamber, when the cable is to be subject

to separate liquid and gas treating operations. The vessel is supported for movement in a direction axially of the cable



runs to accommodate for thermal induced expansions and contractions of cable run bounding conduits.

3,680,570

MACHINE FOR WASHING LOOSE MATERIALS

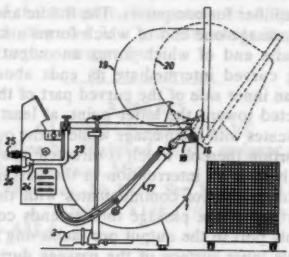
Pietro Nobili, Via F. Lasagna, 5, Parma, Italy

Filed Nov. 27, 1970, Ser. No. 92,988

Claims priority, application Italy, July 18, 1970, 46891 A/70

Int. Cl. B08b *3/06*

U.S. Cl. 134—134 **1 Claim**



An improved machine for washing loose materials comprising an outer tub, an inner tub, and tubing for supplying water to said tubs, in which the inner tub is supported in the outer tub by a shaft about which said inner tub can be swung into an upside down position relative to said outer tub, and a power operated device for swinging said inner tub.

3,680,571

UMBRELLA FOLDING ASSEMBLY

Jack W. Houston, 24 Malvern Lane, Long Island, N.Y.

Filed Jan. 27, 1971, Ser. No. 110,231

Int. Cl. A45b *25/14*

U.S. Cl. 135—22 **9 Claims**

An umbrella folding assembly comprising a hollow support post, and a tubular actuating member slidably mounted for substantially vertical movement within the support post. The ribs for supporting the umbrella cover are pivotally connected at their upper, inner ends to the tubular actuating member. A coil spring disposed within the tubular actuating member serves to bias it in an upward direction for the purpose of effecting folding of the umbrella, and a plurality of detent members are pivotally mounted on the support post and are urged by spring members into a locking position within apertures of the support post and tubular actuating member so as to prevent the upward movement of the actuating member under the force of the spring. Folding of the umbrella can be manually effected by merely pivoting the detent members out of the locking position. Automatic folding of the umbrella is effected if it is subjected to winds of high velocity which cause the umbrella cover and ribs to bow upwardly, by providing a sleeve member that is slidably mounted on the support post beneath the detent members, the sleeve member being connected to the umbrella actuating rods which are connected at the other end to the ribs for the cover. Upon upward movement of the ribs, the sleeve member is moved upwardly into engagement with the detent members to move them out of the locking position, thereby resulting in upward movement of the tubular actuating member under the force of the spring and folding of the umbrella.

3,680,572

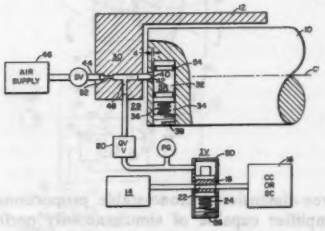
PNEUMATIC OVERSPEED PROTECTIVE SYSTEM

Roy W. Kiscaden, Springfield, Pa., and Robert A. Yannone, Aldan, Del., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 12, 1970, Ser. No. 80,079

Int. Cl. G05d *13/34*

U.S. Cl. 137—49 **6 Claims**



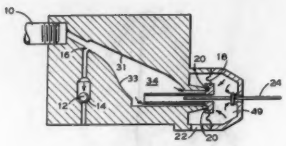
In a pneumatic overspeed protective system for rotating apparatus an air nozzle and a rotating device, responsive to speed variations, cooperate to function as a pneumatic amplifier with high gain, that is a small change in position produces a large change in pressure. When the rotating device is displaced in a radial direction by centrifugal force, a rapid drop in the output signal pressure from the amplifier causes a fluid pressure actuated valve to shut off the energy supply to the rotating apparatus.

3,680,573

PILOT VALVE OPERATED FLUIDIC VALVE

Barry S. Fichter, Dunellen, N.J., assignor to American Standard Inc., New York, N.Y.

Filed May 5, 1970, Ser. No. 34,780
Int. Cl. F15c *3/04*
U.S. Cl. 137—81.5 12 Claims



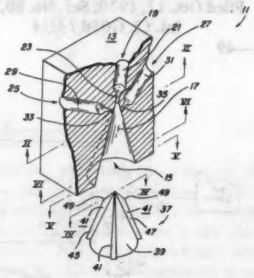
A fluidic valve is provided with a pilot valve for controlling the operation of the fluidic valve, at least insofar as permitting the flow of fluid through the valve is concerned. Opening of the pilot valve produces a pressure in balance on a primary diaphragm thereby permitting the flow of fluid through the fluidic valve. The fluid pressure of the fluid entering the valve inlet serves to maintain the valve in the "on" position. The fluidic valve is so designed that under this state of flow, the fluid entering the valve attaches to a first wall and flows out of the valve through an outlet port. As typical for fluidic valves closing of the sensing or control port to the fluid valve causes the fluid to flip over and attach to a second wall. Flow along the second wall results in fluid to flow to region or chamber between primary diaphragm and the pilot valve thereby producing a pressure balance such that both the primary diaphragm and the pilot valve are pressurized in the closed position.

3,680,574

FLUID FLOW CONTROL DEVICE

Charles E. Price, 505 Gulf Rd., North Palm Beach, Fla.

Filed July 28, 1970, Ser. No. 58,851
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 2 Claims



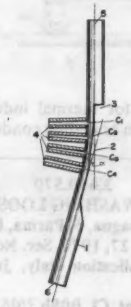
A three-dimensional mono-stable proportional device or fluid amplifier capable of simultaneously performing as a digital device and proportional amplifier, i.e., producing a NOR logic function concurrently with the proportional function. The principle of operation is based on the Coanda or Wall effect. The device has two or more outputs, i.e., the outputs have a proportional relationship one with the other, additionally, an output may include a NOR function. The device may be formed from plastic or the like and lends itself to extremely board tolerances in the manufacturing process, i.e., fluid passageways including power ports, control ports, and outlet ports may be molded integrally with the main body (eliminating costly photoetching and lamination) without degradation of performance. The device includes structure for biasing the main stream to one stable position, assuring passage thereof outwardly through a single outlet port or proportionally dividing it between outlet ports, as desired, when the control ports are deactivated, i.e., the Coanda or Wall effect is maintained at all times independent of the stream from the control ports.

3,680,575

FLUIDIC AMPLIFIER

Takashi Nishimoto, Toyama, Japan, assignor to Kabushiki Kaisha Fujikoshi, Toyomashi, Japan

Filed July 23, 1970, Ser. No. 57,721
Claims priority, application Japan, July 26, 1969, 44/58741
Int. Cl. F15c *1/04, 1/08*
U.S. Cl. 137—81.5 11 Claims



A fluidic amplifier for computers. The fluidic amplifier has an elongated passage one end of which forms a supply port and the opposite end of which forms an output port, this passage being curved intermediate its ends about a given point. Along an inner side of the curved part of the passage, which is directed toward the latter point, at least one input port communicates with the passage while at the outer side of the curved portion thereof, which is directed away from the latter point, there is an interruption in the passage through which the interior thereof communicates with the exterior. The inner surface of the passage thus extends continuously from the supply port to the output port achieving flow of the fluid along this inner surface of the passage during laminar flow with the fluid clinging to the inner continuous surface of the passage, while in response to an input signal through the input port the laminar flow will be converted into turbulent flow achieving the operation of a turbulent amplifier.

3,680,576

BONDED METAL STRUCTURE HAVING INTRICATE PASSAGES FORMED THEREIN, AND A METHOD OF MAKING SAID STRUCTURES

Robert S. Kiwak, Dearborn Heights, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 562,246, July 1, 1966, abandoned. This application Sept. 2, 1970, Ser. No. 69,059
Int. Cl. F15c *5/00*
U.S. Cl. 137—81.5 16 Claims

This invention pertains to bonded metal laminae forming fluidic structures having intricate passages therein, and methods for manufacturing such structures using laminae formed from a first metal and laminae formed from a second metal. The disclosure teaches that a complex bonded structure that includes a plurality of laminae placed above and below a laminae having a pattern cut therein to form a large cavity or passageway can be formed in a single bonding step if the cavity is first filled with support metal. The support metal prevents deformation of the structure during bonding by preventing any metal laminae from being pushed into the cavity. It also transmits bonding pressure across the cavity so that

the portions of the laminae above and below the cavity and aligned with the cavity will be bonded to each other. The disclosure also describes a bonded fluidic passageway structure that can be readily disassembled for inspection or cleaning of the passageways. This structure is formed from a plurality of laminae parts constructed from a first metal and another

lamina part which comprises a pneumatic seal or gasket constructed from a second metal that can be leached out or otherwise chemically removed by a process that will not affect any other part of the structure. When assembled, the pneumatic seal lamina is disposed in a position where its removal will grant access to the passageway.

3,680,577

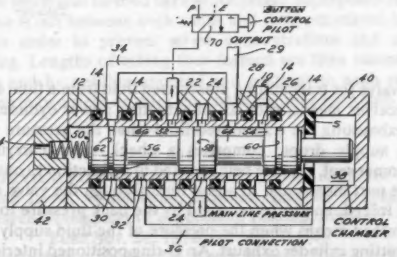
CLOSED CENTER VALVE

Donald E. McGeachy, Highland, Mich., assignor to Numatics, Incorporated, Highland, Mich.

Filed Nov. 30, 1970, Ser. No. 93,772

Int. Cl. F16k *11/07*

U.S. Cl. 137—625.6 **12 Claims**



A control valve for fluid operated circuits for controlling machines and the like which includes a valve member biased to a pressure-off position with a pilot passage and control chamber to effect a line-pressure on-position with a changeover from pilot control to a holding position from line pressure. If line pressure is interrupted for any reason, the valve member returns to a pressure-off position and must be reactivated by an operator, thus preventing an accidental machine start-up when line pressure is restored. The closed center condition as the valve moves to a work position permits changeover from pilot to main pressure control with no pressure loss.

3,680,578

FLUIDIC CONTROL SYSTEMS

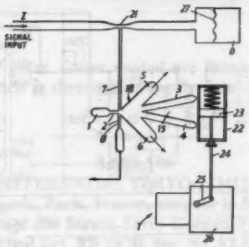
Guy Edward Davies, Fareham, England, assignor to The Plessey Company Limited, Ilford, England

Filed Sept. 2, 1970, Ser. No. 78,336

Claims priority, application Great Britain, Sept. 10, 1969, 44,708/69

Int. Cl. F15c *1/14, 3/04*

U.S. Cl. 137—81.5 **7 Claims**



A fluidic pressure bias which is superimposed on a control pressure and becomes effective whenever the control pressure varies, its sign being independent of the sign of the control pressure variation, is derived from the restricted portion of a Venturi tube interposed between the control-pressure source and a reservoir.

3,680,579

LIQUID LEVEL DETECTING APPARATUS

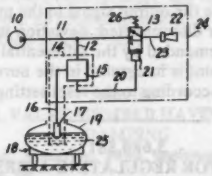
Takeo Hisada, Tokyo; Fumio Nakajima, Yokohama; Takeshi Nishi, Tokyo, and Kunro Sugiyama, Fujisawa, all of Japan, assignors to Tokico Ltd., Kawasaki-shi, Kanagawa-ken, Japan

Filed Oct. 19, 1970, Ser. No. 81,922

Claims priority, application Japan, Oct. 29, 1969, 44/86218; Oct. 29, 1969, 44/86219; Oct. 29, 1969, 44/86220; Oct. 29, 1969, 44/86221

Int. Cl. G01f *23/16*

U.S. Cl. 137—81.5 **6 Claims**

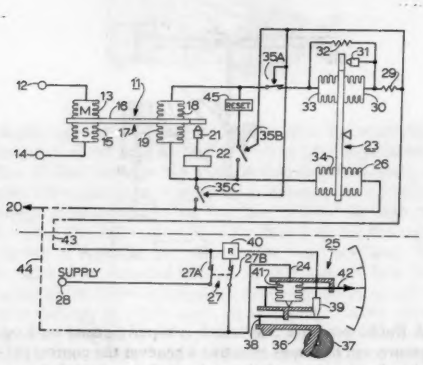


A liquid level detecting apparatus detects a level of the surface of the supplied liquid by use of a liquid level sensing and detecting means. The apparatus comprises a fluidic device which has its input controlled in response to the liquid surface level sensed by the liquid level sensing means and thereby changes its output. Issuance of alarm, stopping of liquid supply and the like operations are performed by changing over the output of the fluidic device.

3,680,580
BUMPLESS-TRANSFER CONTROL SYSTEM

Earl A. Beardsley; Hoel L. Bowditch; Robert C. Prescott, all of Foxboro, Mass.; assignors to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 775,593, Nov. 1, 1968, abandoned. This application Sept. 1, 1970, Ser. No. 68,750
Int. Cl. F15b 5/00; G05d 16/00
U.S. Cl. 137—86 15 Claims



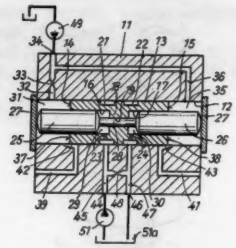
A pneumatic controller has means for effecting bumpless-transfer between an automatic control mode of operation and a manual control mode; in the automatic mode, a pneumatic controller operates the process in a conventional manner, with the output signal to the process also being supplied to a follower device at an auto-manual station, positioning a mechanism continuously in accordance with the output signal to the process; upon transfer to the manual mode, the follower mechanism is placed into actuation by a manual set point, with the output signal to the process thereupon being provided from the manual-auto station; in addition, the output to the process is applied as a set point signal to a secondary pneumatic controller which is connected in a configuration with the primary pneumatic process controller such as will maintain the output bellows of the primary controller at the same pressure as the output signal to the process; to do this, the reset bellows of the primary process controller is supplied with a signal which will balance large deviations between measurement and set point supplied to the primary process controller; upon transfer from manual to automatic, the output of the primary process controller, being the appropriate pressure, is connected to provide the output signal to the process, and the secondary controller disconnected; deviation in output to the process from that demanded by the differential between measurement and set point is integrated in the normal pneumatic controller manner, according to the reset setting.

3,680,581
APPARATUS FOR REGULATING A FIRST FLOW DEPENDING ON A CONTROLLED SECOND FLOW

Gunther Schwerin, Eichenweg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed June 25, 1970, Ser. No. 49,848
Claims priority, application Germany, June 28, 1969, P 19 32 995.4
Int. Cl. G05d 11/03
U.S. Cl. 137—101 15 Claims

A pressure fluid and a control fluid are supplied to a valve cylinder in which a valve slide forms a first pair of variable chambers receiving the pressure fluid through two inlets and discharging the same through two outlets. Two stationary pistons form in the valve slide a second pair of variable chambers receiving and discharging the controlled fluid. The fluid pressures in the variable chambers act in opposite directions on the valve slide and each chamber increases (or decreases) in volume as the correlated chamber decreases (or increases).

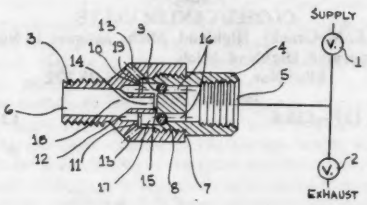


Throttles, or a control valve with throttling control edges, produce a pressure differential between the variable chambers of each pair until the valve slide assumes a balanced position in which the flow of pressure fluid is substantially proportional to the measured and controlled flow of the control fluid.

3,680,582
QUICK EXHAUST VALVE

Richard S. Pauliukonis, 6660 Greenbriar Dr., Cleveland, Ohio

Filed Feb. 16, 1970, Ser. No. 11,621
Int. Cl. G05d 7/00
U.S. Cl. 137—102 5 Claims



A valve for transmitting pressurized fluid from a fluid supply to receiver means, such as an actuating power cylinder, and for exhausting the transmitted fluid when the pressure of the fluid supply drops, comprises a check valve carrying an elastomer seal, the seal being moved in a direction to cover exhaust port means and to admit fluid through the valve during fluid infeed, and to be returned by the back pressure to cover the infeed means when the pressure of the fluid supply drops permitting cylinder exhaust. An O-ring positioned interiorly of the valve body is employed to act as a check valve seal.

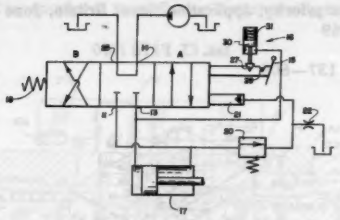
3,680,583
AUTOMATIC SEQUENTIAL OPERATED VALVE

Gilbert D. Clair, Wichita, Kans., assignor to Val-Jac Manufacturing and Supply Company, Inc., Maize, Kans.

Filed Aug. 2, 1971, Ser. No. 168,196
Int. Cl. F15b 11/15
U.S. Cl. 137—106 8 Claims

An automatic four-way valve hydraulically operated for extending and retracting a refuse compaction cylinder, which senses a pressure build-up as the trash is compacted, releasing a pressure responsive detent allowing a spring to drive the

valve spool of the primary valve to the return position, allowing the cylinder to retract until it reaches the end of its stroke



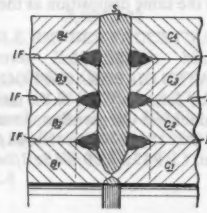
whereupon a pressure build-up causes a pilot cylinder to move the valve spool to the neutral open center position.

3,680,584

WELDING CONSTRUCTION FOR MULTILAYERED DEVICES

Robert Pierart, Saint-Nazaire, France, assignor to Babcock-Atlantique, Paris, France

Filed Feb. 22, 1971, Ser. No. 117,624
Int. Cl. F16l *9/14*
U.S. Cl. 138—143 11 Claims



A welding construction for multi-layered device includes a plurality of concentric superposed tubes tightly fitted within one another and secured to one another by welding at the end of their interfaces formed between adjacent superposed tubes. A space is left between such welds and their associated interface in order to prevent stress concentrations and avoid cracking. Lengths of tubing thus formed are then assembled end to end by welding opposed end portions to each other. Welding in two steps enables the checking after each step.

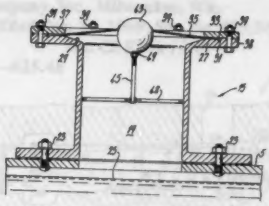
3,680,585

DEVICE FOR VENTING GASES FROM A TANK

Desmond Lowe, Windlesham, England, assignor to National Research Development Corporation, London, England

Filed Nov. 20, 1970, Ser. No. 91,346
Claims priority, application Great Britain, Nov. 21, 1969, 57,168/69; Aug. 13, 1970, 39,094/70
Int. Cl. F16k *17/19*
U.S. Cl. 137—493 15 Claims

A device for venting gases from a cargo tank of a tanker ship when being filled with cargo, including a housing, an annular diaphragm of resilient material secured at its outer periphery to the housing and a spherical seat so positioned as to close the aperture in the diaphragm and deform the diaphragm to generally frusto-conical shape whereby the diaphragm is in forced engagement with the seat and a pressure is required in the tank to lift the diaphragm off the seat to vent gases. The diaphragm can pass over the equator of the seat when a negative pressure is created upon unloading so as to allow air into the tanks. The position of the seat member is adjustable in order to select the pressure at which the device



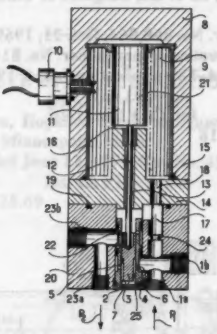
starts to vent gases. Gases vented are formed by the device into a jet which is directed upwardly from the deck of the tanker ship.

3,680,586

DIFFERENTIAL SERVO-LIMITER

Jacques Bourgeois, Paris, France, assignor to Societe a Responsabilite Limitee dite Seram, Livry-Gargan, France

Filed Oct. 22, 1970, Ser. No. 82,917
Claims priority, application France, Oct. 22, 1969, 6936153
Int. Cl. F16k *31/12*
U.S. Cl. 137—501 4 Claims



A differential servo-limiter for regulating flow in hydraulic circuit employs an electromagnet which acts when energized on the same side of a throttle as restricted pressure from the inlet to the differential servo-limiter to balance the pressure difference acting on the other side of the throttle valve constituting unrestricted inlet pressure, the residual flow going to the outlet being at all times dependent on the intensity only of the current to the solenoid coil.

3,680,587

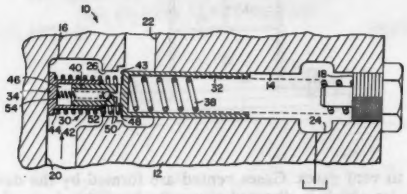
CONTROL VALVE MEMBER HAVING VIBRATION DAMPING

Saul Herscovici, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Oct. 21, 1970, Ser. No. 82,747
Int. Cl. F16k *15/02*
U.S. Cl. 137—514.3 22 Claims

A valve member is spring-biased to close an orifice between an inlet port and an outlet port and is shifted to meter fluid through the orifice by inlet pressure great enough to overcome the spring force. The valve member includes two sections telescoped together to define an expansible and retractable fluid chamber. Inlet fluid is permitted into the chamber via a passage in one of the sections and a check valve prevents reverse flow through the passage. There is a diametral

clearance between the two sections through which fluid is forced resulting in high-fluid damping when the two sections telescope together, such as would be caused by a pulsating source of inlet fluid. In a second embodiment, a second



passage connects the chamber with the sump, and a check valve in the second passage normally prevents flow to the sump, while allowing the release of fluid when the pressure in the chamber is much higher than normal inlet fluid pressures.

3,680,588

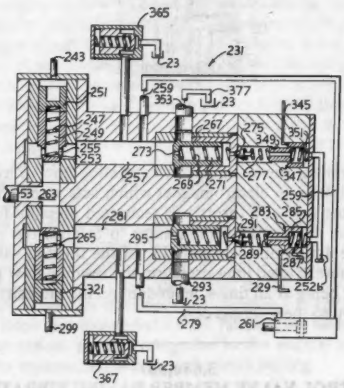
HIGH PRESSURE IMPLEMENT HYDRAULIC CIRCUIT

John L. Hufeld, Peoria; Donald J. Larson, Joliet; Howard A. Marsden, Pekin; James P. Mueller, East Peoria, and William B. Norick, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 868,964, Oct. 21, 1969, Pat. No. 3,575,000, Continuation-in-part of Ser. No. 814,003, April 7, 1969, abandoned. This application Jan. 4, 1971, Ser. No. 103,867

Int. Cl. F16k *11/10*

U.S. Cl. 137—596.18 **3 Claims**



A relatively low pressure hydraulic control system for a high pressure work output system in which a control valve is selectively actuated to position a variable displacement axial piston pump to control the flow in the work output system and to position a directional valve which controls the direction of work output. In such a system wherein two work outputs are provided, thereby requiring two control valves, a priority valve may be utilized in the low pressure system so that a signal from one of the control valves will always override a signal from the other control valve in controlling the axial piston pump.

3,680,589

MOUNTING BLOCK FOR FLUID CONTROL VALVE

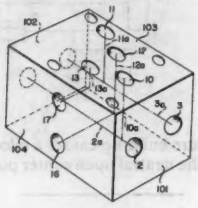
Michael Anthony Jeans, Great Bookham, and Frank Oxley Baines, Norton, near Worcester, both of England, assignors to Louis Newmark Limited, Croydon, Surrey, England

Filed May 25, 1970, Ser. No. 40,268

Claims priority, application Great Britain, June 19, 1969, 31,166/69

Int. Cl. F17d *1/00*

U.S. Cl. 137—608 **10 Claims**



A mounting block for an hydraulic valve is a rectangular parallelepiped having pairs of ports in two opposed faces thereof, the ports of each pair being similarly disposed with respect to a reference plane. A third face of the block is provided with one or more arrays of ports, each array including two ports connected respectively with said channels and two further ports communicating by further channels with a pair of ports in a fourth face of the block. The further pair of ports are disposed with respect to a further plane, perpendicular to the reference plane, in the same disposition as the first pairs.

3,680,590

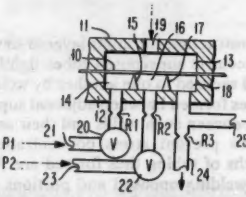
FLUID-OPERATED DIAPHRAGM LOGIC DEVICES

Edward F. Helinski, Johnson City, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1970, Ser. No. 81,711

Int. Cl. F17d *1/00*; F15c *3/04*

U.S. Cl. 137—608 **10 Claims**



A family of fluid-actuated devices for performing logical AND, LATCH and OR functions in response to input pressure signals in which a diaphragm forms a common boundary separating a bias chamber from an output signal chamber and two or more input signal chambers. Variations in signal chamber sizes and particular pressure relationships enable accomplishment of the several logical functions with low power consumption in a compact package.

3,680,591

UNIQUE HYDRAULIC COUPLER

Alban M. Vik, New Brighton, Minn., assignor to Dempco, Inc., Minneapolis, Minn.

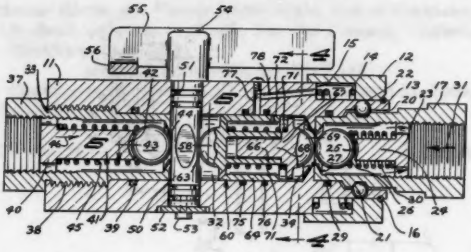
Filed May 7, 1970, Ser. No. 35,444

Int. Cl. F16l *29/00, 37/28*

U.S. Cl. 137—614.05 **22 Claims**

A hydraulic coupler for coupling together two hydraulic line portions and which permits quick disconnection of the

line portions, has valve means for turning off the flow and preventing loss of fluid from the lines when disconnected, and is made so that connections can be made even though there is pressure present in both of the hydraulic line portions, neither of the hydraulic line portions, or only one of the line hydraulic portions. The coupler is made from a unitary body and other



parts that can be manufactured on automatic screw machines and punch presses to insure that the cost of production remains low.

The couplers are made so that the hydraulic circuit in which they are used can be broken merely by rotating a cam for a safety factor to lock out remote implements and hydraulic devices when not in use.

3,680,592

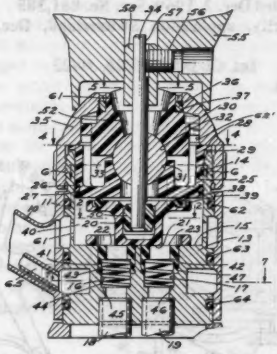
SINGLE HANDLE FAUCET VALVE

Dennis J. Hayman, East Detroit, Mich., assignor to Hydrometals, Inc., Dallas, Tex.

Continuation of Ser. No. 850,338, Aug. 12, 1969, abandoned, which is a continuation of Ser. No. 573,601, Aug. 19, 1966, abandoned. This application May 1, 1970, Ser. No. 33,984

Int. Cl. F16k *11/00*

U.S. Cl. 137—625.4 **10 Claims**



A single handle faucet valve comprising a body defining a chamber having a flat wall surface with hot and cold water inlets extending through the surface. A control disc with a complementary flat surface is provided in contact with the flat wall surface of the chamber and has spaced openings movable into and out of registry with the inlet openings. A sealing member is provided adjacent the control member and engages the control member. A retainer overlies the sealing member. A lever is journalled for rotation between the retainer and the sealing member and has an end thereof interconnected with the control member.

3,680,593

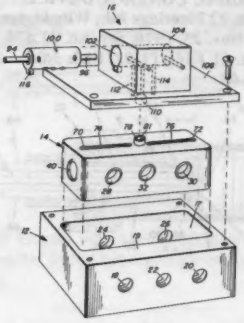
VALVE

Gerald T. Sorenson, Hartland, Wis., assignor to Systems Design Company, Inc., Milwaukee, Wis.

Filed Dec. 31, 1969, Ser. No. 889,567

Int. Cl. F16k *11/07*

U.S. Cl. 137—625.48 **10 Claims**



A valve assembly having a body of elastomeric material molded with ingress and egress passageways and the valve seats and the sealing means thereof are formed integrally with said body.

3,680,594

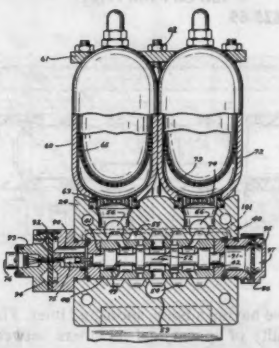
SERVOVALVE WITH ACCUMULATOR MEANS ON DRAIN CAVITIES

Niel R. Petersen, Hopkins, Minn., assignor to MTS Systems Corporation, Minneapolis, Minn.

Filed June 12, 1970, Ser. No. 45,654

Int. Cl. F16k *51/00*

U.S. Cl. 137—625.69 **16 Claims**

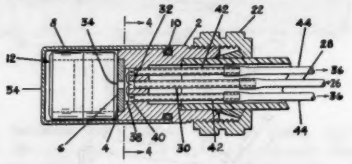


A servovalve assembly used with hydraulic shakers comprising accumulator means in close association with all low pressure drain and/or return areas of the servovalve to prevent cavitation in the drain cavities and return lines. More accurate dynamic response from the valve to an input program is thus obtained.

In the drain or return lines from the main controls spool, accumulators are mounted directly in the valve block to eliminate pressure spikes or peaks caused by cavitation in these normally low pressure areas. The opposite ends of the main spool are also equipped with resilient diaphragm type accumulator means to prevent pressure peaks in these areas. On the pilot spool, the drain area cavities are provided with small O-ring accumulators wherein the O-ring groove is provided

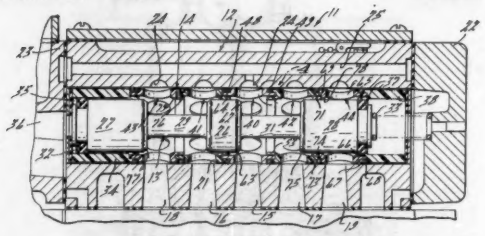
with relief areas so that when the spool movement causes pressure fluctuations, the O-rings will deflect into the provided relief areas to prevent high peak pressures. The valve then is capable of operating without disruptive pressure peaks during dynamic operation.

3,680,595
FLUIDIC CONTROL DEVICE
Richard C. Boulton, 22 Pineridge Rd., Wilmington, Mass.
Filed Nov. 23, 1970, Ser. No. 91,874
Int. Cl. F16k *11/02*; F15c *3/00*
U.S. Cl. 137—625.48 **5 Claims**



A fluidic-magnetic proximity sensor which is able to be totally enclosed and therefore used in contaminated enviroments due to the use of a magnetic latching means interposed between the element to be sensed and the fluidic element. In operation the enclosed magnet moves in response to proximity of the element to be sensed and closes or opens fluidic paths to actuate a fluidic element such as a back pressure sensor, proximity sensor or flip-flop switch in a fluidic circuit. The apparatus is capable of several modes of operation by interchanging various parts.

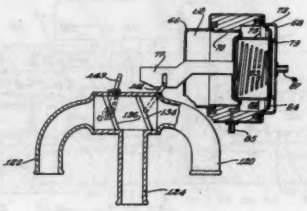
3,680,596
RESILIENT SEAL SPOOL VALVE
David A. Pickett, Warren, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.
Filed Dec. 28, 1970, Ser. No. 101,986
Int. Cl. F16h *11/07*
U.S. Cl. 137—625.69 **8 Claims**



A spool valve having a body, spool and liner. The liner comprises a plurality of spacer-seal members between the body and spool. These members are of low friction material and interfit, having spool engaging lips which are pressure assisted toward their sealing position. In another embodiment, the spool has members of low friction material which engage lands in the body and have pressure assisted sealing lips.

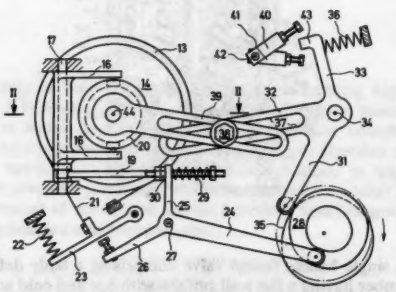
3,680,597
DUAL VALVE CONSTRUCTION
Frank E. Obermaier, Morton Grove, Ill., assignor to Eaton Corporation, Cleveland, Ohio
Filed March 11, 1970, Ser. No. 18,524
Int. Cl. F16k *19/00*
U.S. Cl. 137—630.19 **6 Claims**

A valve body having first and second openings with a third opening therebetween includes a first valve means in the body positioned between the first and third openings and a second valve means in the body positioned between the third and second opening whereby flow through and between the openings may be controlled. Each of the first and second valve means has an operator means connected therewith so that the valve means may be moved between an open and a closed position. For each valve means a pivot member allows rotation thereof and a pivot arm connected to the pivot member is in



turn attached to an actuator arm of the operator means whereby substantially linear movement of the actuator arm will rotate the first and second valve means. Each pivot arm may be connected to a separate actuator arm having a separate power means. Alternatively a single operator means may control both valves when the second valve means is provided with a resilient means that biases the second valve to a closed position.

3,680,598
DRIVE ARRANGEMENT FOR A FEED ROLLER ON A LOOM
Max Kunz, Ruti, Zurich, Switzerland, assignor to Ruti Machinery Works, Ltd. formerly Casper Honegger, Ruti, Zurich, Switzerland
Filed Dec. 2, 1969, Ser. No. 881,385
Claims priority, application Switzerland, Dec. 9, 1968, 18332
Int. Cl. D03d *49/06, 39/22*
U.S. Cl. 139—1 **9 Claims**



A drive arrangement for the feed roller used to advance the warp threads required in the weaving process on a loom, which comprises brake means for halting the feed roller, an alternately engageable clutch transmitting rotary movements to

the feed roller, drive means for alternately driving the clutch, and a transmission means having a transmission ratio that may be adjusted for connecting the drive means to the clutch.

3,630,599

LOOMS FOR WEAVING

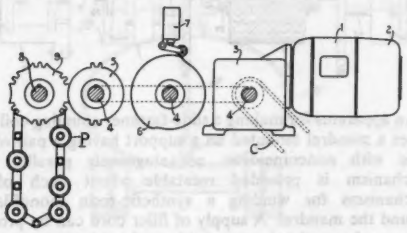
Thomas Hindle, and Vincent Pinder Banks, both of Blackburn, England, assignors to Hindle, Son and Company Limited, Blackburn, England

Filed Jan. 30, 1970, Ser. No. 7,146

Claims priority, application Great Britain, March 22, 1969, 15,175/69

Int. Cl. D03d *51/02, 49/20*

U.S. Cl. 139—1 **18 Claims**



A reversible drive mechanism for a loom component, for example a pattern barrel or a cloth take-up roll, which component is to be driven in stepwise manner at an appropriate time in the loom cycle comprises a drive motor for the component and an electrical control means whereby the motor is started and stopped periodically all in proper synchronism with the loom operation. The control means is of a kind which is self setting in that it includes a first two-position starting-switch adjustable between its two positions by a first actuator operable at predetermined times in the loom cycle and a second two-position stopping-switch adjustable between its position by a second actuator operable upon the completion of a requisite movement of the loom component, the switches being arranged in series with each other and with a solenoid coil for the motor contactor. Upon the completion of a required movement of the loom compartment, the second two-position stopping-switch changes over so that the electrical circuit to the drive motor is broken, the circuit being remade on subsequent change-over of the first two-position starting-switch.

Hand-operated switchgear is provided to enable the motor, or motors, to be electrically reversed, whereby the loom component, or components, may be caused to rotate in either the forward or reverse direction, as required, the timing of the step-by-step movement in relation to the loom crankshaft being maintained for either direction of rotation.

3,680,600

PROCESS AND APPARATUS FOR STORING WEFT YARN IN LOOMS

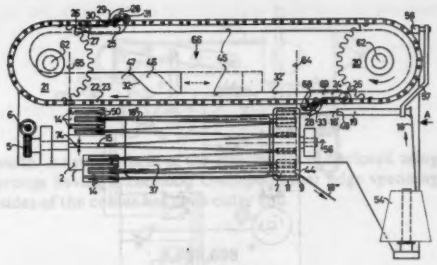
Allan W. H. Porter, CH-9062 Lustmuhle/AR, Stosswald 1290, Switzerland

Filed Dec. 19, 1969, Ser. No. 886,516

Int. Cl. D03d *47/36*

U.S. Cl. 139—122 R **36 Claims**

The method and apparatus for storing weft yarn to facilitate the picking of a length or multiple of a length generally corresponding to the woven width, and in which a single thread is continuously loaded onto a storage body in a zig-zag pattern forming reversal loops at terminal ends of the zig-zags, the storage body being generally cylindrical including means for automatically loading the same, and including means for



removing weft threads which are maintained under positive mechanical control by the apparatus for minimizing snarls and weaving faults.

3,680,601

DRAW HOOKS OF A DOBBY

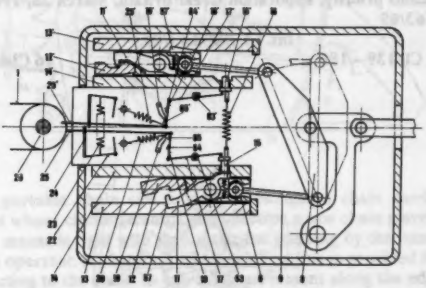
Joseph Palau, Duingt, Haute-Savoie, France, assignor to Staubli Ltd., Horgen-Zurich, Switzerland

Filed June 24, 1970, Ser. No. 49,307

Claims priority, application Switzerland, June 25, 1969, 9706/69

Int. Cl. D03c *1/00, 1/06, 15/00*

U.S. Cl. 139—68 **10 Claims**



A process and apparatus for reading-in of a perforated pattern card by means of reading needles for controlling the draw hooks of a dobby. An operating lever is flexibly coupled to the reading needles so as to effect the position of the draw hooks. The reading needles, when they fall into a hole of the pattern card, bring the operating lever within reach of a power drive which, without effecting the reading-in position of the needles, initiates an amplified power control of the draw hooks through the operating lever.

3,680,602

LOOMS FOR WEAVING

Thomas Hindle, and Vincent Pinder Banks, both of Blackburn, England, assignors to Hindle, Son and Company Limited, Blackburn, England

Filed Feb. 26, 1970, Ser. No. 14,552

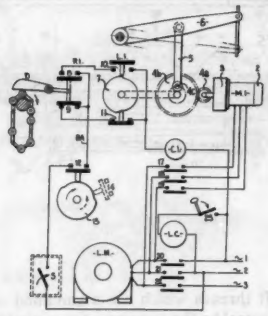
Claims priority, application Great Britain, Feb. 26, 1969, 10,159/69

Int. Cl. D03d *51/20*

U.S. Cl. 139—76 **4 Claims**

In order to ensure that such various loom operations as dobby-shedding and box-changing occur at a requisite stage in

a loom cycle of operation, even on restarting after a loom stoppage, a speed sensitive switch driven from a loom shaft is provided in the circuit to the drive motor of each respective



auxiliary so as to ensure that the auxiliaries are not energized until the loom shaft has attained a predetermined rotational speed.

3,680,603

LOOMS FOR WEAVING

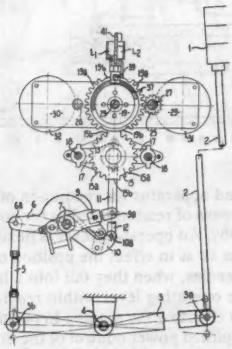
Thomas Hindle, and Vincent Pinder Banks, both of Blackburn, England, assignors to Hindle, Son and Company Limited, Blackburn, England

Filed Jan. 30, 1970, Ser. No. 7,001

Claims priority, application Great Britain, March 25, 1969, 15,463/69

Int. Cl. D03d *43/04*

U.S. Cl. 139—180 **16 Claims**



A change-box loom has a displacement means for lifting and lowering the shuttle-boxes, the displacement means comprising one or more cranks or equivalent eccentrics couplable with a lever or combination lever connected with the shuttle-box, an individual drive motor for each such crank or equivalent eccentric and drivingly connected therewith, and a control means for energizing a selected motor or motors so as to rotate the or each related crank for a required change of cell, the control means operating to de-energize the motor or motors upon the completion of a half revolution of the crank and the drive coupling between the output shaft and the motor being arranged to ensure an accurate 180° rotation of the crank.

3,680,604

APPARATUS FOR MAKING A SLIDE-FASTENER COUPLING COIL

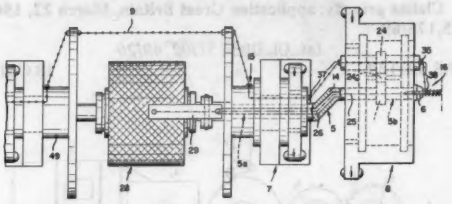
Alfons Frohlich; Franz Hochlehnert, and Werner Rademacher, all of Essen, Germany, assignors to Opti-Holding AG, Glarus, Switzerland

Filed Sept. 14, 1970, Ser. No. 71,923

Claims priority, application Germany, Sept. 16, 1969, P 19 46 702.8

Int. Cl. B21f *3/04*

U.S. Cl. 140—92.1 **11 Claims**



An apparatus for making a slide-fastener coupling coil comprises a mandrel mounted on a support having a pair of portions with noncoincident, advantageously parallel, axes. Mechanism is provided rotatable about each of the mechanisms for winding a synthetic-resin monofilament around the mandrel. A supply of filler cord can be provided between the mechanisms, and this cord can be fed to the mandrel through a longitudinal passage in the support. The downstream mechanism can be arranged to hold the tension in the monofilament at the same level.

3,680,605

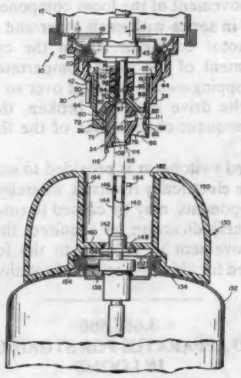
PACKAGE FOR DISPENSING PRESSURIZED MATERIALS

Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.

Filed March 3, 1971, Ser. No. 120,468

Int. Cl. B65b *3/10*

U.S. Cl. 141—20 **32 Claims**



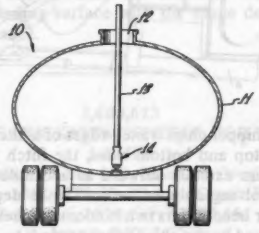
A pressurized dispensing package system includes two dispensing packages, each package including a projecting discharge passage structure. One of the packages includes an actuator assembly that includes two structures that are movable relative to each other. One of the structures defines a refill passage and an intersecting dispensing passage. In a first position of the structure a continuous material flow path that includes a discharge passage structure and the dispensing

passage is defined and at least one port of the refill passage is closed by a surface of the other structure. In a second position the refill passage is aligned with the discharge passage structure and a continuous material flow path through the refill passage is defined whereby a transfer tube may be introduced into the refill passage to block the dispensing passage at the intersection thereof.

3,680,606
STATIC-REDUCING AND VAPOR-REDUCING LOADING VALVE FOR TANK TRUCKS

Harold W. Ensign, Fullerton, Calif., assignor to Cla-Val Co., Costa Mesa, Calif.

Filed Feb. 17, 1969, Ser. No. 799,567
Int. Cl. B65b *3/26*
U.S. Cl. 141—128 **23 Claims**



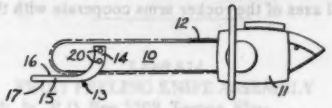
A loading valve mounted at the end of the fill pipe for a tank truck, tank car, etc., and which is adapted automatically to shift from a low-flow condition to a high-flow condition when the liquid in the tank reaches a predetermined level. Such level is adequate to insure continued immersion of the valve outlet, so that a high rate of flow may occur without resulting in splashing and consequent generation of static charges and/or smog-forming vapors. An enclosed control chamber is provided, and communicates through a ballast (or reservoir) chamber and a control port with the exterior of the valve at a predetermined elevation. Gasoline or other volatile fluid from the valve inlet is passed, in the form of a jet, from a power nozzle through the control chamber and thence to a receiver, the receiver being adapted to create sufficient static pressure that the loading valve is maintained in a low-flow condition so long as the control chamber contains air as distinguished from liquid. As soon as the liquid level in the tank rises to the elevation of the control port, the control chamber fills with liquid and thus operates to shift the loading valve to a high-flow condition. Prior to the time the control chamber fills with liquid, the jet aspirates air into the control chamber, such air sweeping generated vapors downwardly to the tank bottom at an elevation below the surface of the liquid in the tank. Means are provided to retard the rate of valve shifting from a low-flow to a high-flow condition, and thus prevent surges in the line leading to the control valve, but to permit rapid shifting from a high-flow to a low-flow condition during initial positions of the tank-filling operation. Deflector means are provided to retard the initial inflow and to insure that liquid flowing through the valve enters the tank smoothly and in a generally horizontal direction.

3,680,607
CHAIN SAW GUIDE

Vernon S. Robinson, 433 Linden Dr., Lewiston, Idaho

Filed June 29, 1970, Ser. No. 50,735
Int. Cl. B27b *17/02*
U.S. Cl. 143—32 F **5 Claims**

A chain saw guide comprising a rigid prong fixed to the outer end of the center bar along which the chain teeth are entrained. The prong includes a center base and an offset extension having an inner edge that overlaps the path of the teeth adjacent to the outer end of the center bar. The prong extends substantially parallel to the sides of the center bar so as to extend outwardly a minimum amount beyond the normal chain

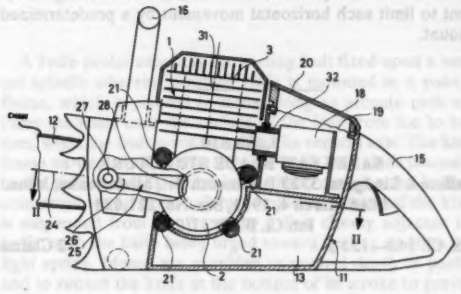


saw width. A second form of the attachment is disclosed using two prongs having a common U-shaped inner edge spanning both sides of the center bar at its outer end.

3,680,608
CHAIN SAW

Heinz Emmerich, Boeblingen, and Eggert Bulk, Sindelfingen, both of Germany, assignors to Solo Kleinmotoren GmbH, Maichingen, Germany

Filed Feb. 2, 1970, Ser. No. 7,569
Claims priority, application Germany, Feb. 4, 1969, P 19 05 301.15
Int. Cl. B27b *17/02*
U.S. Cl. 143—32 **8 Claims**



A portable chain saw having an elongated chain carrier about whose circumferential edge portion a saw chain travels. Grip means is rigid with the carrier for gripping by the hands of an operator. An internal combustion engine is provided for imparting to the chain its travelling movement along the edge portion of the carrier. Connecting means connects the combustion engine with the carrier so that they constitute a unit but without transmitting vibrations between the combustion engine and the carrier.

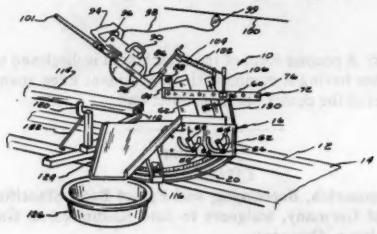
3,680,609
CUTTING APPARATUS

Donald C. Menge, Warren, Mich., assignor to Troy Steel Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 752,918, Aug. 15, 1968, Pat. No. 3,578,043. This application Dec. 28, 1970, Ser. No. 101,843
Int. Cl. B27b *5/18*
U.S. Cl. 143—46 E **14 Claims**

An apparatus for cutting an elongated workpiece at a selected angle with respect to the longitudinal axis of the workpiece. The apparatus has a power saw mounted to an upright support member which provides for horizontal movement of the power saw back and forth along a straight line across the workpiece; the upright support member being rotatable about a vertical axis to align the power saw along a desired cutting pitch angle. The upright support member has a pair of upwardly extending rocket arms rotatably mounted proximate their lower portions to the upright support, while

the upper portions of the rocker arms are rotatably mounted to an upper power saw carrying member on which the power saw is, in turn, carried for pivotable movement to and away from the workpiece independent of its horizontal motion. A pivot and slot arrangement disposed intermediate the opposite rotational axes of the rocker arms cooperate with the upright



support as the lower portion of the rocker arms rotate through a predetermined arcuate path so as to impart a horizontal motion to the upper power saw carrying member. A stop member is carried by one of the rocker arms and engages the other rocker arm after a predetermined amount of stroking movement to limit such horizontal movement by a predetermined amount.

3,680,610

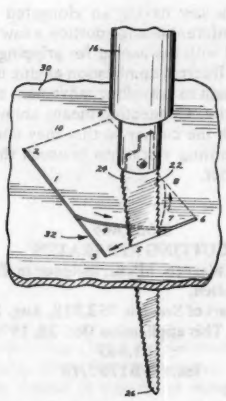
SABRE SAW BLADE STRUCTURE

Wallace I. Lindgren, 3723 Dartmouth Dr., Minnetonka, Minn.

Filed March 4, 1971, Ser. No. 121,021

Int. Cl. B27b *33/02*

U.S. Cl. 143—133 J **2 Claims**



A double edged sabre saw blade having oppositely disposed cutting edges, said cutting edges having a non-parallel relation converging in the direction of the free end of said blade to form a pointed plunge cutting end portion, said cutting edges each being adapted to cut in a direction oppositely that of the other.

3,680,611

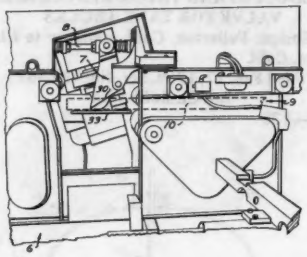
DEFLECTION CLAMP

Leonard A. Mitten, Vancouver, British Columbia, and Robert E. Chapman, Coquitlam, British Columbia, both of Canada, assignors to Hawker Siddeley Canada Ltd., Toronto, Ontario, Canada

Filed March 3, 1970, Ser. No. 16,267

Int. Cl. B27l *11/02*

U.S. Cl. 144—162 **9 Claims**



An edge chipper chips waney edges of a flitch of timber having parallel top and bottom sides, the flitch passing through feed roll pairs extends outward as a cantilever as it moves towards revolving chipper knives. Since depth trimmed by each chipper head differs in a random manner, an unbalanced force produced by the chipper heads tends to deflect the flitch — particularly before it reaches the outfeed rolls. This unbalanced force causes a deflection, producing a cant, chipped side edges of which can depart from desired dimensions by an intolerable amount. A deflection clamp bearing on the upper and lower sides of the flitch is provided, a pressure shoe of the clamp urges the flitch against a fixed anvil with ridges of the clamp and anvil forming grooves acting as tracks restraining the flitch against deflection.

Passage of the flitch through the infeed roll pair senses flitch thickness and sets the clamp, and succeeding roll pairs, so as to lift by an adjustably determinate amount when reached by the moving flitch. Lift of the pressure shoe and of suceeding pressure rolls is resiliently resisted by a force which can be adjusted as required. Thus passage of the flitch through the feed roll pair automatically senses thickness and passes this information to the pressure shoe and succeeding pressure rolls for effective drive and restraint from deflection.

3,680,612

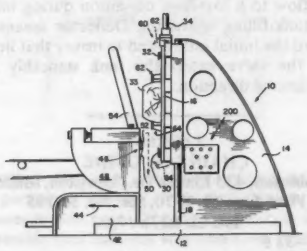
EXTENSION DOG SYSTEM FOR VENEER SLICER

Thomas F. Hale, New Albany, Ind., assignor to Capital Machine Company, Inc., Indianapolis, Ind.

Filed March 17, 1971, Ser. No. 125,064

Int. Cl. B27l *5/06*

U.S. Cl. 144—178 **11 Claims**



A veneer slicer comprising a flitch table providing a mounting surface, dogs for gripping a flitch at a first distance from

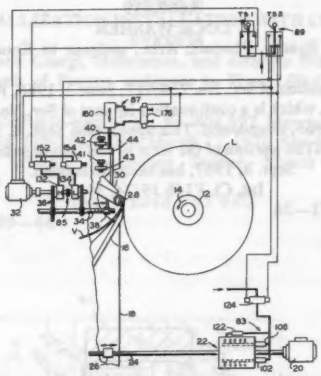
the mounting surface, and a knife and pressure bar assembly movable along a path toward and away from the mounting surface, the flitch table being reciprocable between first and second opposite positions transversely relative to the path of the knife and pressure bar assembly. Extension dog assemblies are mounted on the flitch table and proportioned and designed to grip a flitch at a second and greater distance from the mounting surface, each extension dog assembly including opposing jaws positioned and designed to engage generally opposite portions of a flitch, means for guiding the jaws for movement toward the central portion of a mounting surface to their gripping positions and away from the central portion to their releasing positions, and power means for moving the opposing jaws between their respective gripping and releasing positions. The guiding means and power means are proportioned and designed such that, when the flitch table reciprocates between its opposite positions and the jaws are in their respective releasing positions, the jaws will not interfere with the knife and pressure bar assembly when it moves toward the mounting surface with the space defined by the said second distance.

3,680,613

VARIABLE THICKNESS CONTROL FOR VENEER LATHE

Curtice F. Daniels, P.O. Box 302, Glendale, Oreg., and Curtice F. Daniels, Jr., 1311 N.W. Hawthorne, Grants Pass, Oreg.

Filed July 6, 1970, Ser. No. 52,491
Int. Cl. B27l *5/02*
U.S. Cl. 144—209 R **17 Claims**



The control includes a series of solenoid valve-controlled air cylinders which actuate shift bars to shift preselected gears of a multiple ratio gear box to transmit motive power to a knife carriage and thereby feed a veneer knife into a log at preselected variable speeds to peel veneer from the log at a desired thickness. A roller bar spaced from the knife can be shifted at a fast speed relative to the knife to adjust quickly the horizontal spacing between the knife and the bar when changing the feed rate of the knife. The roller bar can also be shifted slowly relative to the knife to vary the pressure applied by the roller bar to the veneer as it is peeled. Solenoid valve-controlled hydraulic cylinders shift the carriage mounting the roller bar vertically between upper and lower adjustable stops to change quickly the vertical spacing between the roller bar and knife when the knife speed is changed. A common manually operated remote control makes all three adjustments of the thickness settings simultaneously.

ERRATUM

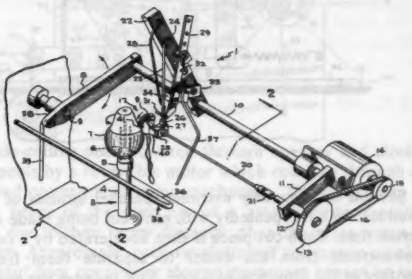
For Class 144—288 see:
Patent No. 3,680,617

3,680,614

FRUIT PEELING KNIFE ASSEMBLY

Ralph Polk, Jr., P.O. Box 3208, Tampa, Fla.

Filed Feb. 9, 1971, Ser. No. 113,817
Int. Cl. A23n *7/00*
U.S. Cl. 146—3 M **10 Claims**



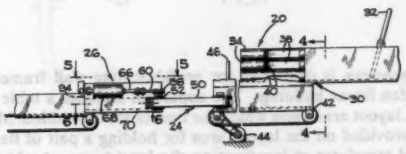
A knife peeler assembly for peeling fruit fixed upon a vertical spindle wherein, a rotary knife is mounted in a yoke, a frame, which is pivoted to move along an arcuate path and carry the knife over the surface of the fruit from top to bottom, while the fruit is rotated about its vertical axis. The knife frame carries a motor that drives a knife stub shaft journaled in the frame. An extended knife shaft, carrying the knife is connected to the stub shaft by a universal joint, and the knife is suspended from the frame by a link closely adjacent the knife, with the knife being urged toward peeling position by a light spring. Means are provided to control depth of peeling and to retract the knife at the bottom of its stroke to prevent contact with the fruit spindle.

3,680,615

METHOD OF AND APPARATUS FOR PREPARING FRUITS OR VEGETABLES

Edward L. Catalina, deceased, late of Milpitas, Calif. (by Doris M. Catalina, 64 Whittier St., Milpitas, California, 95035, administratrix)

Filed Nov. 19, 1969, Ser. No. 877,973
Int. Cl. A23n *15/00;* **B26d** *3/26*
U.S. Cl. 146—42 **5 Claims**

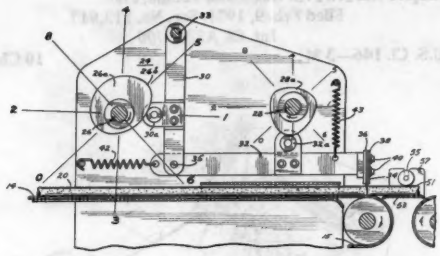


Method and apparatus for preparing spheres and other fancy cuts of potatoes or other fruits and vegetables wherein each raw product is initially cored to provide a cylindrical core member of regular cross-section, the core members are fed intermittently, a variable distance along their longitudinal axes in sequence, and are, during periods between feeding, acurately cut transversely to provide the finished products.

3,680,616
METHOD AND APPARATUS FOR SEVERING FOOD PRODUCTS

Jack J. Rejsa, Minneapolis, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed April 6, 1970, Ser. No. 25,639
Int. Cl. B26d *1/56*
U.S. Cl. 146—222 5 Claims

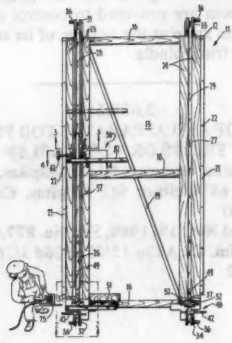


Several continuously extruded parallel strands of a food product are cut repeatedly with each cut being made at a different time. Each cut piece is then accelerated by a conveyor downstream from the cutter to separate them from one another in the direction of travel. This reduces the number of parallel product flow streams, for example, from 8 streams to 2 streams. The cut pieces are then fed to a packaging machine.

3,680,617
WALL FRAME PREFABRICATION APPARATUS

Frederic H. Schneider, 4521 Merrill Ave., Oakland, Calif.

Filed Aug. 10, 1970, Ser. No. 62,564
Int. Cl. B25h *5/00*
U.S. Cl. 144—288 11 Claims

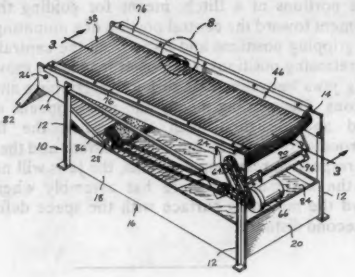


Apparatus is described for prefabricating wall frames for wooden frame buildings. The apparatus includes a table having a layout area upon which the frames are assembled. Means are provided on the layout area for holding a pair of flexible metal templates at locations on the layout area at which indicia on the templates will establish the locations on the upper and lower wall frame plates where studs and the like are to be nailed to them. A saw guide at one end of the table is aligned with a marking on one of the templates representative of one end of a wall, and a lumber stop member is adjustable along such template for alignment with a marking on the template representative of the other end of the wall. Such arrangement enables lumber pieces to be cut on the table to provide wall plates of a proper length.

3,680,618
DEVICE FOR STEMMING FRUIT

Emil E. Pertics, P.O. Box 84, La Paz, Ind.

Filed July 24, 1970, Ser. No. 58,068
Int. Cl. A23n *15/02*
U.S. Cl. 146—55 15 Claims

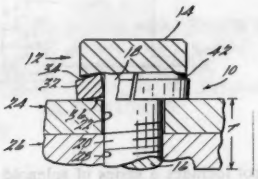


A device for removing stems from fruit including an endless power driven belt consisting of a plurality of transverse parallel rollers and having upper and lower frame supported runs. Each roller along the upper run of the belt is caused to rotate in a direction opposite to the direction of rotation of the immediate roller on each side thereof. The fruit is deposited upon the upper run of the belt and as it advances along such run, the stems thereof are received between adjacent rollers and pulled from the fruit.

3,680,619
LOCK WASHER

Harold R. Sparks, Phoenix, Ariz., assignor to Knocke & Associates

Continuation of Ser. No. 734,117, June 3, 1968, Pat. No. 3,527,279, which is a continuation-in-part of Ser. No. 503,550, Oct. 23, 1965, abandoned. This application Sept. 4, 1970, Ser. No. 69,874The portion of the term of this patent subsequent to Sept. 8, 1987, has been disclaimed.
Int. Cl. F16b *39/24, 39/26*
U.S. Cl. 151—36 26 Claims



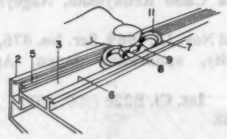
A lock washer comprising a length of wire of substantially trapezoidal or parallelogram cross section formed into a helical configuration, the lock washer having a radially directed slit at a predetermined angle to the axis thereof, whereby the ends of the lock washer define inclined abuttingly engageable surfaces, the lock washer having radially spaced inner and outer surfaces inclined relative to the axis thereof, and axially spaced upper and lower surface portions inclined radially inwardly and upwardly toward the axis thereof, whereby the lock washer originally assumes a helical configuration but upon tightening of an associated bolt, stud, nut, or the like, the helix of the lock washer is removed and the lock washer assumes a generally conical configuration and is thereby adapted to exhibit the superior tightening characteristics of a conical lock washer.

3,680,620

SCREW CONNECTION, MORE PARTICULARLY FOR USE IN METALLIC WINDOW OR DOOR FRAMES

Hans Gotschel, Oberelchingen, and Helmut Settele, Ulm (Danube), both of Germany, assignors to Wieland-Werke Aktiengesellschaft

Filed Feb. 22, 1971, Ser. No. 117,671
Claims priority, application Germany, March 3, 1970, G 70 07 594.4; March 5, 1970, P 20 10 321.3
Int. Cl. F16b 37/10
U.S. Cl. 151—41.75 6 Claims



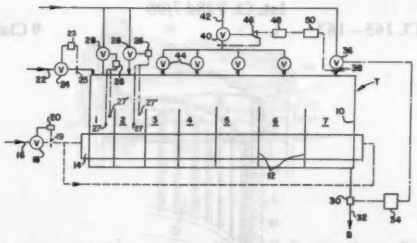
A screw connection, more particularly for use in metallic window and door frames which are made up from profiled sectional rods and in cross-section are formed with a T-shaped longitudinal groove and serve as support or bearing for the nut of the connecting screw, comprising an axially divided nut whose opposed nut portions are arranged in elastically deformable holding means so that they are movable diametrically in relation towards and away from each other and are adapted to be positively held under compression between the interior walls of the longitudinal groove.

3,680,621

CRYSTALLIZATION INSTALLATION WITH CONTROL SYSTEM

Jean Claude Giorgi, Hellemmes, and Georges Windal, Roubaix, both of France, assignors to Fives Lille-Cail, Paris, France

Continuation-in-part of Ser. No. 804,097, March 4, 1969, abandoned. This application March 12, 1970, Ser. No. 19,069
Claims priority, application France, March 4, 1968, 68142174
Int. Cl. B01d 1/00, 9/02
U.S. Cl. 159—44 5 Claims



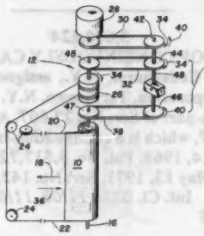
Sugar is crystallized out of sugar juice by passing the juice through a succession of heated crystallization cells. Diluted sugar juice is supplied to the intermediate cells and the last cell. Either the steam pressure in the heating means or the feed rate of the diluted juice is controlled in response to the percentage of crystals or dry matter in the crystallized product removed from the last cell, the control for the intermediate cells being regulated by an interposed resistance-capacity system which dampens the control signal.

3,680,622

POWER-TRANSMITTING MECHANISM FOR SIDE-COILING DOOR

Russell H. Lester, Jr., Commack, N.Y., assignor to North American Door, Lindenhurst, N.Y.

Filed April 14, 1971, Ser. No. 133,957
Int. Cl. E06b 9/204
U.S. Cl. 160—25 3 Claims



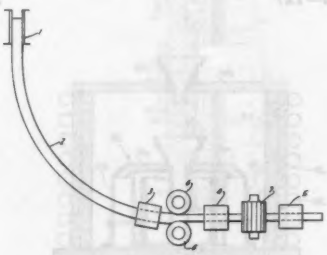
A side-coiling door powered through opening and closing movements by a reversible motor which operates through an improved power-transmission mechanism. The outer turns or helical wraps of the door are of a greater circumferential length, due to their larger diameter, than the inner wraps of the door. Accordingly, each revolution of the means causing either said door opening or closing movement cannot be correlated to a standard length of door being at that time either wound or unwound upon said means. The improved power-transmission mechanism hereof allows for this disparity, even though it has but a single power shaft for both a door-opening and a door-closing sprocket mounted on said power shaft. This is achieved by having only one said sprocket, during any interval of operation of the mechanism, drivingly connected to the power shaft while the other sprocket is freewheeling thereon. The freewheeling condition, of course, does not interfere with the driving requirements of the power shaft.

3,680,623

IMPROVEMENTS IN OR RELATING TO PROCESSES OF MANUFACTURING ROLLED STOCK FROM PRODUCTS OF CONTINUOUS CASTING PROCESSES

Bruno Tarmann, Kapfenberg, and Heinrich Vonbank, Klagenfurt, both of Austria, assignors to Gebr. Bohler & Co. Aktiengesellschaft, Vienna, Austria

Continuation-in-part of Ser. No. 605,464, Dec. 28, 1966, abandoned. This application July 29, 1969, Ser. No. 847,816
Claims priority, application Austria, Dec. 15, 1966, 11106/66
Int. Cl. B22d 11/00
U.S. Cl. 164—76 10 Claims



A process for making rolled stock directly from strands of continuously cast steel products in a working and forming installation, comprising two pairs of rolls which are respectively mounted in spaced relationship to each other along the path

through which the strand travels. The distance between the rolls of each pair of rolls being adjusted so that the mass flow rate of said strand immediately upstream from the first pair of rolls being at least 0.5 percent larger than the mass flow rate of said strand immediately downstream from said first pair of rolls, while the mass flow rate immediately upstream and downstream from the second pair of rolls is substantially the same. The second pair of rolls squeezing the strand to such an extent that it effects a reduction in cross-sectional area in the strand of at least 10 percent.

3,680,624

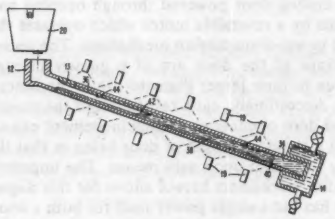
METHOD OF CONTINUOUSLY CASTING TUBE

Leonard Watts, Cedarhurst, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 27,607, April 13, 1970, Pat. No. 3,625,277, which is a continuation-in-part of Ser. No. 705,491, Feb. 14, 1968, Pat. No. 3,517,725. This application May 13, 1971, Ser. No. 143,055

Int. Cl. B22d *11/08, 11/06*

U.S. Cl. 164—85 13 Claims



A tundish receiving a first molten metal and a closed-end mold are moved apart relative to each other so that the mold forms a solidified shell of a billet, molten metal flowing through the solidified shell to the mold. During the casting, a second or altered molten metal is introduced into the tundish to flow through the elongating billet so that a continuously cast billet is produced with a core of one metal, a layer of alloyed metals, and a shell of another metal. Billets may be produced with steel cores and stainless steel shells, "killed" steel cores and "rimmed" steel shells, and other combinations. Tubing may also be formed by the continued relative separation of the tundish and the mold after the source of molten metal is exhausted.

3,680,625

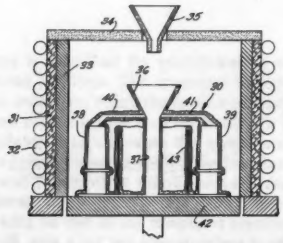
HEAT REFLECTOR

Frank J. Hein, Minerva, and Donald G. Fleck, Alliance, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Nov. 12, 1970, Ser. No. 88,608

Int. Cl. B22d *25/06, 27/04*

U.S. Cl. 164—127 5 Claims



Method and apparatus for producing columnar castings by precision investment casting techniques, wherein a refractory reflector is positioned in the furnace behind the molds contained therein to make it possible to control the unidirectional temperature gradient more closely and provide more pieces per mold.

3,680,626

CORROSION-RESISTANT SURFACE COATING FOR USE IN THE CASTING OF ALUMINUM AND ALUMINUM ALLOYS

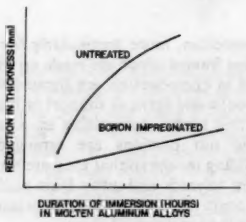
Kaneyoshi Kusunoki; Tatsumi Asakura; Masahiro Nakakawa, all of Toyota-shi; Noboru Komatsu, and Tohru Arai, both of Nagoya-shi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken and Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya-shi, Aichi-ken, Japan

Filed Nov. 13, 1969, Ser. No. 876,369

Claims priority, application Japan, April 15, 1969, 44/28689

Int. Cl. B22c *1/00, 3/00*

U.S. Cl. 164—138 11 Claims



To prevent the corrosion of the surfaces contacting molten aluminum and aluminum alloy when such molten materials are being cast, a surface layer of boron impregnated ferrous materials is provided on the contacting surfaces of the containers and other conveying members used in the casting of the molten aluminum and its alloys.

3,680,627

FLEXIBLE SUPPORT WALL FOR TUBE-IN-SHELL HEAT EXCHANGER

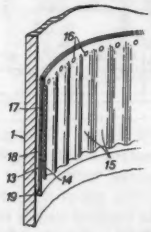
David Lees Linning, Fernhead, near Warrington, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed March 19, 1970, Ser. No. 20,903

Claims priority, application Great Britain, March 26, 1969, 15,899/69

Int. Cl. F28d *7/00*

U.S. Cl. 165—162 9 Claims



A heat exchanger of the "tube-in-shell" has the tubes in its tube bundle spaced apart by wire wrapping. An annular flexible member located on the inside wall of the heat exchanger shell surrounds the tube bundle. An interspace is defined between the annular flexible member and the inside surface of the heat exchanger shell. The end of the interspace facing flow of fluid through the shell is open so that the fluid has access to

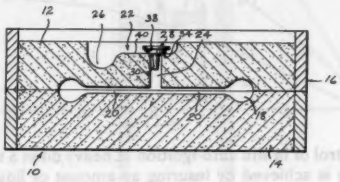
the interspace the other end of which is closed. The pressure of the fluid in the interspace expands the flexible member radially inwards to apply a centripetal loading on the tube bundle.

3,680,628

DEVICE FOR EXCLUDING SLAG AND OTHER FLOATING IMPURITIES FROM MOLTEN METAL AS THE METAL IS POURED INTO A MOLD

Neil J. McLean, Route 3, Box 467B, Plymouth, Ind.

Filed June 10, 1970, Ser. No. 45,025
Int. Cl. B22d *37/00*, *43/00*
U.S. Cl. 164—362 **3 Claims**



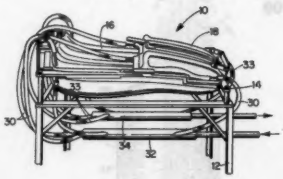
A device for excluding slag and other floating impurities from molten metal as the metal is poured into a mold. The device is positioned in the pouring basin of the mold and is constructed to float as the metal is poured into the pouring basin so as to permit only the lower substantially impurity-free stratum of the molten metal to enter the mold cavity.

3,680,629

APPARATUS FOR MOLDING AND CURING FOAMED ARTICLES

Laurent R. Gaudreau, Somersworth, and Floyd E. McDowell, Exeter, both of N.H., assignors to McCord Corporation, Detroit, Mich.

Filed Dec. 12, 1969, Ser. No. 884,656
Int. Cl. F25b *29/00*
U.S. Cl. 165—26 **4 Claims**



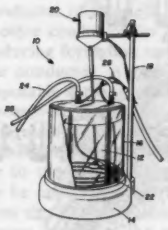
An apparatus for molding and curing flexible foam. The apparatus includes a mold having base and lid sections, the latter when in the closed condition cooperating with the base section to enclose a mold cavity. Heat transfer coils are embedded in the base and lid sections, and inlet and exhaust manifolds interconnect opposite ends of the embedded coils. The inlet manifold is connected to independent sources of heating and cooling fluid, and the exhaust manifold is connected to a drain. Valves between the inlet manifold and the sources of heating and cooling fluids, as well as between the exhaust manifold and the drain, control the alternate flow of heating and cooling fluid through the heat transfer coils.

3,680,630

TEMPERATURE CONTROL SYSTEM WITH HEATER-COOLER

Paul J. Watts, Orem, Utah, assignor to Tronac, Incorporated, Orem, Utah

Filed Oct. 9, 1969, Ser. No. 865,113
Int. Cl. F25b *29/00*
U.S. Cl. 165—30 **7 Claims**



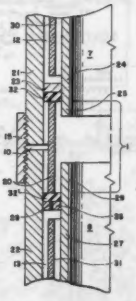
A temperature control system for use in constant temperature baths includes a combined heater-cooler. In one form the heater-cooler comprises a stainless steel tube having a silicone rubber tube mounted in it. Electric current is directed through the stainless steel tube to generate heat and cooling water is directed through the rubber tube. More precise control is achieved by mounting two rubber tubes in the stainless steel tube to provide counter-flow cooling. In another form, the heater-cooler comprises a heating wire having a rubber coating formed on it. The wire is positioned within a cooling water tube formed from thin metal.

3,680,631

WELL PRODUCTION APPARATUS

William G. Allen; James A. Le Velle, and Frank J. Schuh, all of Dallas, Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,647
Int. Cl. E21b *43/00*
U.S. Cl. 166—57 **18 Claims**

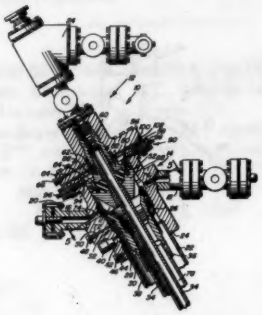


A method and apparatus for producing a warm fluid from a well through casing, the casing passing through a permafrost zone, wherein the permafrost is insulated from melting by the combined use of vacuum and solid thermal insulation.

3,680,632
PRESSURE CONTROL WELL HEAD FOR SLANTED BORE HOLES

Thomas A. Myers, 13702 Moon River Trail, Corpus Christi, Tex.

Filed July 15, 1970, Ser. No. 62,738
Int. Cl. F21b *33/03*
U.S. Cl. 166—89 9 Claims



Well head assembly and apparatus accommodating the establishment, completion and maintenance of a pressure controlled well at an angle to the vertical. Flow lines and discharge conduits in horizontal positions are directly connectible to the housing of the well head assembly. Wear bushings, inner casings and tubing are suspended and sealed by parts inserted through a conventional blow-out preventer during drilling, cementing and well completing operations.

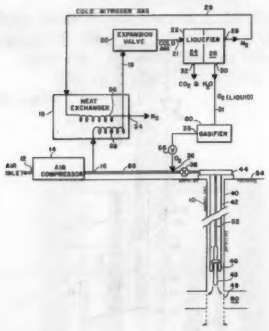
ERRATUM

For Class 165—162 see:
Patent No. 3,680,627

3,680,633
SITU COMBUSTION INITIATION PROCESS

John D. Bennett, Denton, Tex., assignor to Sun Oil Company (Delaware), Dallas, Tex.

Filed Dec. 28, 1970, Ser. No. 101,888
Int. Cl. E21b *43/24*, *33/03*
U.S. Cl. 166—256 11 Claims

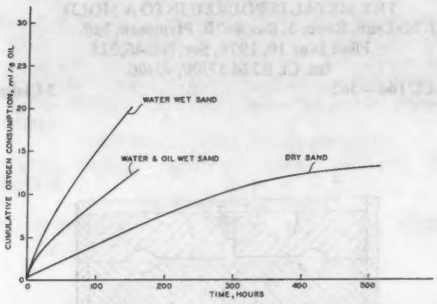


The initiation of in situ combustion in formations penetrated by a wellbore is accomplished by extracting a portion of the air stream being injected into the formation, removing oxygen from the extracted air portion, and adding the oxygen to the air stream being injected into the formation.

3,680,634
AIDING AUTO-IGNITION IN TAR SAND FORMATION

Dixon W. Peacock, and Riley B. Needham, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed April 10, 1970, Ser. No. 27,210
Int. Cl. E21b *43/24*
U.S. Cl. 166—261 4 Claims



Control of in situ auto-ignition of heavy oil in a tar sand formation is achieved by insuring an amount of liquid water in the formation such that oxygen consumption is increased when air or oxygen is injected thereinto. Oxidation rate is increased and therefore the time required to reach auto-ignition is reduced. The method is applicable to operations such as in situ drive combustion. Water, hot water, or steam can be used. Both oil-wet and water-wet sands exhibit increased oxygen consumption over sands not containing a degree of water saturation. A water saturation of say 15 percent in a 45 percent porosity sand results in about a 2½ times increase in O_2 consumption over that of dry sand. With injected water, raising the total formation of water to about 20 percent, the temperature after 1,000 hours of air injection was 180° F. whereas without water injection the temperature of the dry sand was only 96° F. in an experiment applied to Asphalt Ridge tar sand.

3,680,635
METHOD AND APPARATUS FOR IGNITING WELL HEATERS

Holland J. Berry; William C. Hardy, and Dale W. Zadow, all of Richardson, Tex., assignors to Sun Oil Company (Delaware), Dallas, Tex.

Filed Dec. 30, 1969, Ser. No. 889,060
Int. Cl. E21b *43/24*
U.S. Cl. 166—300 7 Claims

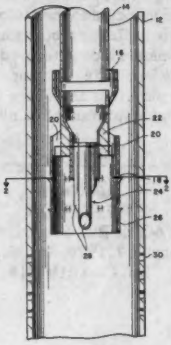
Ignitors are provided for initiating fuel fed well heaters located adjacent earth formations in a wellbore. The ignitors are battery powered and subsist independently downhole. Batteries are used to provide current to a heating element or, in conjunction with an oscillator and transformer can be used to generate an electric arc using a spark gap. Additionally, a catalytic ignitor can be used in conjunction with a hydrogen containing fuel gas, thereby providing a spontaneous hydrogen and air reaction. The hydrogen-air reaction raises the temperature to that of natural gas ignition.

3,680,636

METHOD AND APPARATUS FOR IGNITION AND HEATING OF EARTH FORMATIONS

Holland J. Berry; William C. Hardy, and Dale W. Zadow, all of Richardson, Tex., assignors to Sun Oil Company, Dallas, Tex.

Filed Dec. 30, 1969, Ser. No. 889,061
Int. Cl. E21b *43/24*
U.S. Cl. 166—302 35 Claims



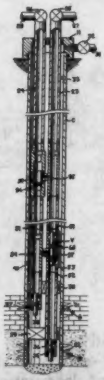
A heater for stimulating wells which include a heat shield with openings for air in the heat shield side walls, an air inlet upstream of a burner to premix the fuel and air, and a burner made up of a bundle of tubes of varying lengths to vertically spread the flame. Alternatively, to vertically spread the flame, a burner is provided in tubular form with perforations extending the length of the tube. Wireline run ignitors, using energy from batteries are used to ignite the burners. Also, a wireline run catalytic material combined with an injected hydrogen mixture can be used for ignition.

3,680,637

WELL TOOLS AND METHODS OF OPERATING A WELL

George Max Raulins, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 800,477, Feb. 19, 1969. This application Aug. 20, 1970, Ser. No. 65,425
Int. Cl. E21b *43/00, 23/00*
U.S. Cl. 166—313 61 Claims



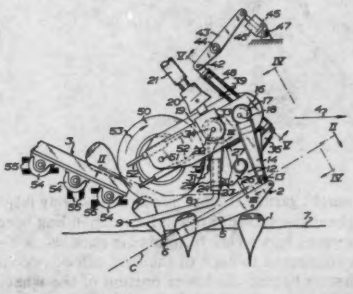
Well apparatus for use in a well having a plurality of flow conductors extending thereinto and providing a crossover flow conduit and valve means for controlling flow communication between a pair of said flow conductors to permit circulation of fluids from one of said conductors to the other of said conductors by means of said crossover conduit and valve means, to move well tools into and out of the well through one or the other of said flow conductors and to circulate fluids in the well to perform well service operations, for gas lifting or aerating the fluids in said other flow conductor. A crossover device is connectable between a pair of flow conductors for establishing fluid flow communication between the flow conductors. A crossover flow control valve is removably installed in a vertical flow passage concentric with one of the flow conductors for controlling flow of fluids from said conductor to the other through the crossover passage, operable by varying the pressure in one of the flow conductors, in the well bore or in a third flow conductor in the well, operable for admitting lifting gas to the other conductor for flowing the well fluids from the well producing formation upwardly out of the well through said other conductor. A gas lift valve is mountable and removably disposable in the other conductor in communication with the crossover passage for controlling the admission of lifting gas through the crossover flow passage into the well fluid conductor for controlling the lifting of the well fluids in said conductor to the surface. The crossover flow controlling valve may be omitted, if desired, and lifting gas admitted directly from the first conductor lifting gas conductor through the crossover passage to the gas lift valve for lifting the gas in the well fluid conductor. Each valve prevents cross-flow of fluids from the well flow conductor to the lifting gas conductor. The gas lift valve may be removed while the crossover valve is in place in the crossover device, and the crossover flow control valve may be removed while the gas lift valve is in place in the crossover device, whereby each of said valves may be removed for servicing or repair, if desired, and the other valve remaining in place will prevent cross-flow of well fluids from the well flow conductor to the lifting gas conductor. A sliding sleeve valve may be incorporated in one or more of the longitudinal passages of the crossover device for positively closing the crossover flow passage when no crossover flow control valve or gas lift valve is in place in the crossover device. A method of operating a well having a plurality of parallel flow conductors extending thereinto by establishing communication between a pair of said flow conductors to permit flow of fluids downwardly through one of the conductors and across to the other and thence outwardly to the surface through said other conductor, to operate, install or remove well tools in said flow conductors and to establish desired circulation between formations in the well and the surface; or to provide gas lift for well fluids.

3,680,638

ROOT-CROP HARVESTERS

Stig Lennart Sjovall, Kavlinge, Sweden, assignor to Svenska Sockerfabriks Aktiebolaget, Malmo, Sweden

Filed Oct. 28, 1970, Ser. No. 84,722
Claims priority, application Sweden, Oct. 29, 1969, 14776/69
Int. Cl. A01d *25/04*
U.S. Cl. 171—76 4 Claims



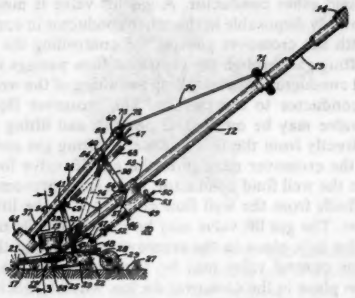
Guide means disposed between the lifting means and the cleaning and elevating means of a root-crop harvester com-

prise a pair of independent cleaning and elevating tines which like the lifting arms of the lifting means can be set in motion in relation to the harvester and are spaced the smallest mutual distance apart at their free ends.

3,680,639
SPRINKLER HEAD EARTH AND GRASS CUTTER MECHANISM

William C. Davis, P.O. Box 388, Peoria, Ariz.

Filed May 7, 1971, Ser. No. 141,258
Int. Cl. A01b *45/00*
U.S. Cl. 172—15 9 Claims



A miniature power operated, rotary mowing device having an earth and grass edger for sprinkler heads and employing a simple manual operable means manipulated by an operator for quickly being rendered capable of performing the rotary mowing action or the earth and grass cutting sprinkler head action.

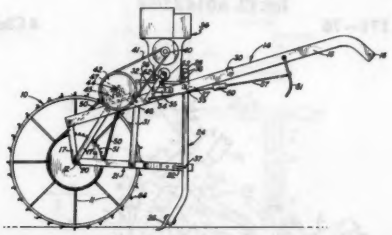
ERRATUM

For Class 172—159 see:
Patent No. 3,680,648

3,680,640
GARDEN TRACTOR

Elmer C. Dawson, 402 E. Willow St., Scottsboro, Ala.

Filed Nov. 24, 1970, Ser. No. 92,346
Int. Cl. A01b *69/258*
U.S. Cl. 172—258 8 Claims



A lightweight garden tractor having a relatively large single traction wheel connected through four depending braces to a pair of diverging bars which terminate in handles. A Y-shaped plow foot connected to each of the bars extends downwardly to immediately behind the lower portion of the wheel, and a horizontal forked member which is pivoted to the depending braces connects with the plow foot and, intermediate the plow foot and depending braces, includes an upstanding support member which, with the upper portion of the plow foot, carries a platform upon which the motive power, an internal gasoline motor, is supported. The weight of the gasoline motor is disposed almost directly over the tool carrying portion of the plow foot and a direct metal linkage with the plow foot exists through same and also through the upstanding support member and the forked member. Motive power is supplied to the traction wheel by means of a drive sprocket affixed thereto which is driven by a chain from a further small sprocket on the same shaft with a large pulley which in turn is driven by a belt from a small pulley connected to the motor's shaft, there being a control member for effecting engagement of the belt for propeling the implement which is secured near one of the handles on the diverging bars. The operator's view of the tool carrying portion of the plow foot and of the traction wheel where it contacts the ground is substantially unimpaired by the other parts of the tractor.

3,680,641
WEED SPUD

Louis T. Hein, 3515 4-Mile Rd., Racine, Wis.

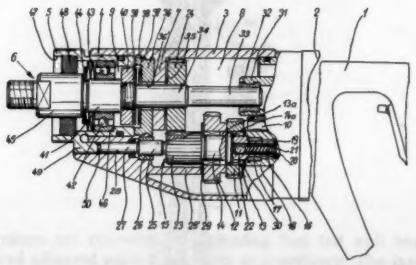
Filed Sept. 17, 1970, Ser. No. 72,977
Int. Cl. A01b *1/16*
U.S. Cl. 172—371 1 Claim

A tool for cutting weed roots below the ground surface, having a shank, a cutting edge extending transversely of the shank, the latter being formed of sheet metal and having an inverted U-shaped cross section. A handle is provided which terminates in a resilient knob for added comfort when using the tool.

3,680,642
VARIABLE SPEED PERCUSSION DRILLING MACHINE

Manfred Kirn, Stuttgart-Moehringen; Reinhard Hahner, Stuttgart; Reinhold Stroezel, Leinfelden; Alfred Hettich, Echterdingen, and Max Burklin, Waldenbuch, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 6, 1970, Ser. No. 87,457
Claims priority, application Germany, Nov. 14, 1969, P 19 57 235.1
Int. Cl. E21c *1/12*
U.S. Cl. 173—13 12 Claims



A common manually operated member is provided in a drilling machines for selectively effecting percussion drilling and rotary drilling, and also rotation of the tool holder shaft at two different speeds during either operation. First and second control means, including cams, connect the manually operated member, such as a turnable knob or sleeve, with a striking mechanism by which the tool holder shaft can be reciprocated, and with a shiftable transmission.

3,680,643

FLUID ACTUATED TOOL HAVING REMOVABLE COIL SPRING BIASING MEANS

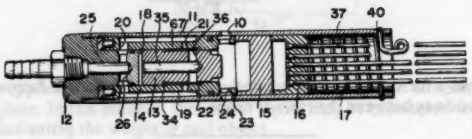
William M. Cameron; Toshio Mikiya, and Mitsuma Matsumura, all of Tokyo, Japan, assignors to Nitto Kohki Company Limited

Filed Feb. 26, 1970, Ser. No. 14,475

Claims priority, application Japan, March 1, 1969, 44/17989; April 21, 1969, 44/35816; May 10, 1969, 44/43145; May 28, 1969, 44/48985; Oct. 14, 1969, 44/97422

Int. Cl. B21c *43/00*

U.S. Cl. 173—133 10 Claims



A fluid actuated tool which utilizes a tubular sleeve that is formed independently of the internal tool elements. The tool includes a tubular sleeve, a cylinder mounted within said sleeve, a space between the sleeve and the cylinder being provided which is used as an air-passage, a piston inserted in the cylinder which reciprocates by the pressure imposed by incoming air from the air-passage, a receiving piece provided at the forward end of the sleeve, the receiving piece having a hammer, a needle chisel or other workpiece attached thereto and being moved in correspondence with the movements of the piston. A coil spring, which is removably retained within the sleeve by a projection or a removable cap element, biases the piston and receiving piece rearward.

3,680,644

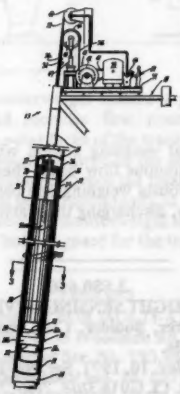
PILE DRIVING SYSTEM AND APPARATUS

Samuel Clifford Doughty, Burlingame, Calif., assignor to Santa Fe International Corporation, Santa Fe Springs, Calif.

Division of Ser. No. 756,685, Aug. 30, 1968, Pat. No. 3,604,522. This application Dec. 28, 1970, Ser. No. 101,458

Int. Cl. E02d *7/00*

U.S. Cl. 173—139 5 Claims



A system for driving piles by a succession of blows struck from above by a hammer element wherein a driving head assembly transfers the blows to the upper end of a hollow elongated pile. The hollow pile entraps a water column beneath the head and means are formed in the head for transmitting portions of the water column via the head in response to blows struck upon the head. A cushion of entrapped gas is disposed between the head and column of liquid to momentarily absorb reactive forces derived from the column of water.

3,680,645

METHOD AND DEVICE FOR DRILLING HOLES IN ICE

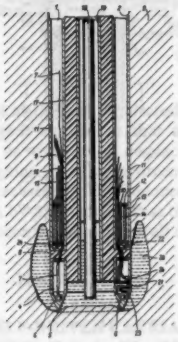
Edwin Horbach, deceased, late of Stuttgart-Rohr, Germany; Rita Horbach; Yvonne Horbach, and Konstanze Horbach (heirs), assignors to Rita Horbach

Filed Oct. 2, 1969, Ser. No. 863,176

Claims priority, application Germany, July 19, 1969, P 19 36 902.9

Int. Cl. F25c *5/04*

U.S. Cl. 175—16 13 Claims



A method and apparatus for drilling holes in ice by melting the ice at the bottom of a drill hole to form a water reservoir and cooling the wall to re-freeze the upper portion of the water reservoir so that a continuous ice shell is maintained around the drill hole.

3,680,646

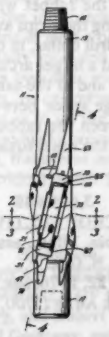
REAMER-STABILIZER

Robert Q. Hughes, Midland, and William R. Garrett, Houston, both of Tex., assignors to Smith International, Inc.

Filed Oct. 28, 1970, Ser. No. 84,726

Int. Cl. E21b *17/10*

U.S. Cl. 175—323 15 Claims

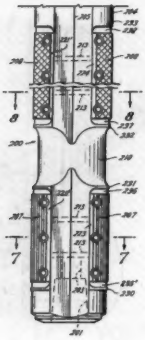


A reamer-stabilizer for rotary drilling of earth formations includes a body for transmitting fluid, axial loads, bending moment, and torque, to which fixed, wall contacting blades are replaceably attached by means including body portions suitable also for replaceable attachment of rolling cutters if desired. The wall contacting elements, blades or rollers, are set tangent to a helix concentric with the body. The blade attachment means may include hard resilient antifretting means.

3,680,647
WALL CONTACTING TOOL

James W. Dixon, Edmonton, Alberta, Canada, and Samuel T. Crews, Jr., Houston, Tex., assignors to Smith International, Inc.

Filed May 18, 1970, Ser. No. 38,223
Int. Cl. E21b 17/10
U.S. Cl. 175—325 14 Claims



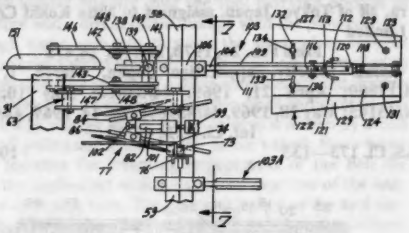
A drill string wall contacting tool, suitable for deviation control and/or bit stabilization is provided with replaceable wall contacting elements. Generically the tool is of the rotating fixed blade stabilizer type wherein the wall contacting elements rotate with the drill string but are fixed relative thereto, there being fluid passages in the sides of the tool which divide it azimuthally into a plurality of blades at whose periphery are the wall contacting surfaces. Preferably the tool is a four bladed stabilizer of the species known as a square drill collar. The wall contacting tool is grooved longitudinally at its outermost periphery, i.e., the corners of the square drill collar, and includes field replaceable wear elements received in the grooves and secured in place by screws or bolts. Preferably the grooves are rabbets, i.e., having two plane sides that are perpendicular to each other and the wear elements have correlative surfaces, whereby the wear elements can be screwed or bolted to both sides of the rabbet without tightening of the screws to one side drawing the strips away from the other side. In the case of a square drill collar, in order to provide greater depth to each rabbet and a larger arcuate wall contacting surface for each wear pad, and at the same time allow sufficient longitudinal fluid passage space between the wear pads, the sides of the collar between the rabbets are relieved as compared to the flat sides of the usual square drill collar.

3,680,648
ROW CROP CULTIVATOR

Wayne S. Tonsfeldt, Sabin, Minn., assignor to Alloway Manufacturing, Inc., Fargo, N. Dak.

Filed Jan. 22, 1970, Ser. No. 5,056
Int. Cl. A01b 17/00, 63/24
U.S. Cl. 172—159 23 Claims

A row crop cultivator mounted on a three-point hitch of an agricultural tractor. The cultivator has a folding frame with a center beam assembly and side beams pivotally mounted on arms pivotally attached to the center beam. The arms selectively permit opposite ends of the side beams to be coupled to the center beam assembly so that the cultivator can be assembled in a wide, transverse working position and, alternatively, in a folded, narrow, transport position. The cultivator has transverse tool bars carrying a plurality of earth working dual discs. Mounted on the tool bars are pairs of row guide units having wheels that function to align the cultivator with furrows midway between the rows of crops. Each row guide unit

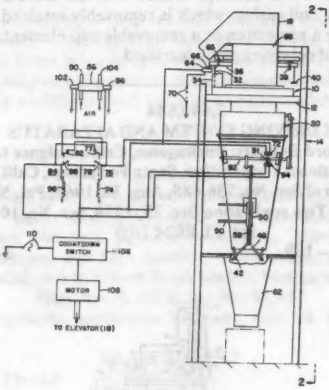


has a furrowing tool associated with a shield to form a furrow midway between the rows of crops.

3,680,649
FLUENT MATERIAL WEIGHING SYSTEM

Allie A. Johnson, Route 1, Pulaski, Tenn.

Continuation-in-part of Ser. No. 689,456, Dec. 11, 1967, Pat. No. 3,460,641. This application June 19, 1969, Ser. No. 834,785
Int. Cl. G01g 13/22
U.S. Cl. 177—99 14 Claims



A fluent material weighing system which accepts fluent material on a continuous flow basis, then batch weighs the material, simultaneously weighing one batch and discharging another, and finally, discharging the material on a continuous flow basis.

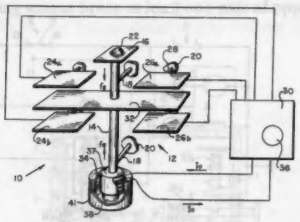
3,680,650
WEIGHT SENSING DEVICE

Robert W. Zimmerer, Boulder, Colo., assignor to Scientech, Inc., Boulder, Colo.

Filed Nov. 10, 1971, Ser. No. 197,336
Int. Cl. G01g 3/08, 7/06, 7/02
U.S. Cl. 177—210 9 Claims

A device for indicating the weight of an object is disclosed herein and includes a first circuit for producing an oscillatory excitation signal which is capacitively coupled to a second circuit for producing at the output of said second circuit a signal indicative of the weight of said object. In this regard, the second circuit is capacitively coupled to the first circuit by a coupling plate mounted to a support member for movement in response to the weight of said object. This output signal is applied to an electromagnetic assembly which, in response

thereto, applies to said coupling plate a proportional force which is equal and opposite to the gravitational force of the



supported object for terminating movement of said coupling plate. In this manner, the output signal may be monitored for indicating the weight of said object.

3,680,651

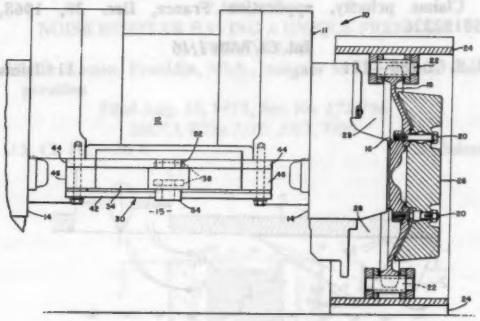
FUNCTIONAL COUNTERWEIGHT SYSTEM FOR A TRACK LAYING TRACTOR

Charles George Termont, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed March 11, 1970, Ser. No. 18,562

Int. Cl. B62d *55/00*

U.S. Cl. 180—9.4 **7 Claims**



A functional counterweight system is provided for a track laying tractor and includes first counterweights secured respectively to the outer faces of the track drive sprockets and a second counterweight secured to the underside of the tractor transmission housing between the final drive housings. The first counterweights serve functionally as guards for the drive sprockets and the second counterweight serves functionally as a drawbar and as a bottom guard for the transmission housing.

3,680,652

HYDRAULIC DRIVE FOR MULTI-AXLE VEHICLES

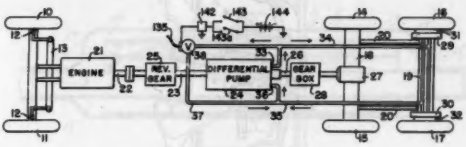
Clarence Kirk Greene, 1155 Woodside Rd., Berkeley, Calif.

Continuation-in-part of Ser. No. 793,468, Jan. 23, 1969, abandoned. This application Jan. 14, 1971, Ser. No. 106,606

Int. Cl. B60k *17/14*, *17/34*, *17/36*

U.S. Cl. 180—22 **18 Claims**

In a vehicle having driving wheels mounted on different axes and a power plant, the latter is drivingly connected to the input shaft of a differential pump the output shaft of which is mechanically coupled to the driving wheels on one axis, and the driving wheels on the other axis are driven by one or more positive displacement hydraulic motors which receive fluid from the pump. The pump is a positive-displacement pump which has an output shaft rotating at a speed equal to that of the input shaft when the flow of pumped fluid is blocked, the speed decreasing progressively as more fluid is pumped, due to reduced external flow resistance. The two axes may be at the rear of the vehicle or, respectively, at the front and rear. When the hydraulic motors are of effectively variable displacement, the torque on the first-mentioned wheels remains about constant, in relation to that of the differential pump



input shaft (except as this can be altered by the interposition of a mechanical gear shift), but that applied to the other wheels decreases as the motor displacement is decreased while the vehicle gains speed; concurrently, the speed of the former wheels increases. Fixed-displacement hydraulic motors can be used. A by-pass valve across the differential pump, when opened, reduces the torques on all driving wheels essentially to zero.

3,680,653

SELF-DRIVEN CARRIAGE

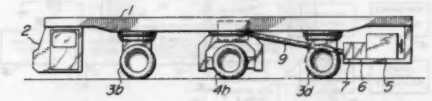
Norio Murata; Toshihiko Takeda; Hirochika Sakai; Akio Utsumi, and Nobuyuki Matsuda, all of Kudamatsu-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 21, 1969, Ser. No. 851,969

Claims priority, application Japan, Aug. 28, 1968, 43/61163; Oct. 16, 1968, 43/74970; Jan. 24, 1969, 44/5863

Int. Cl. B62d *7/04*, *61/10*

U.S. Cl. 180—23 **20 Claims**



Two pairs of driven wheel units and a pair of driving wheel units are rotatably mounted on the underside of a loading bed at the front, rear and the intermediate positions of the bed, each wheel unit including at least a pair of wheels mounted on an axle which is pivotally mounted to the loading bed and operatively rotated by a hydraulic mechanism. A travel mode designating mechanism is operatively associated with the hydraulic mechanism so as to set the respective wheel units in a desired direction individually providing for travelling of the carriage in longitudinal, transverse or gyratory movement and for steering of the individual wheel units during travelling of the carriage.

3,680,654

BEARING FOR VEHICLE WHEELS, PARTICULARLY FOR DRIVEN WHEELS OF AUTOMOBILES

Wolfgang Eyb, Leonberg, and Robert Klosterhuber, Stuttgart-Zuffenhausen, both of Germany, assignors to Firma Dr. Ing. h.c.F. Porsche KG, Stuttgart-Zuffenhausen, Germany

Filed Dec. 16, 1969, Ser. No. 885,428

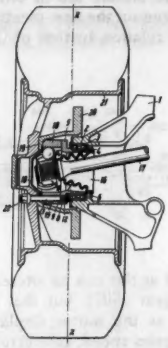
Claims priority, application Germany, Jan. 22, 1969, P 19 02 942.6

Int. Cl. B60k *17/30*

U.S. Cl. 180—48 R **5 Claims**

A vehicle wheel bearing wherein the drive is effected by means of a universal joint with the joint component thereof associated with the vehicle wheel being held by a hub receiving

the wheel bearing constructed as a multiple-row antifriction bearing disposed approximately on the central plane of the rim beside the universal joint. The hub of the antifriction bearing is provided with wheel studs distributed uniformly along the circumference and serve for receiving and holding the universal-joint housing, a brake plate, and the wheel rim.

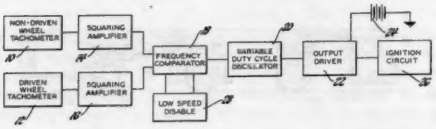


3,680,655

ELECTRICAL WHEEL SLIP LIMITING APPARATUS

David G. Beyerlein, and Douglas W. Sweet, both of Flint, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 6, 1970, Ser. No. 52,637
Int. Cl. B60h *31/00*
U.S. Cl. 180—54 R 3 Claims



Maximum traction of a vehicle during acceleration is assured by a circuit responsive to signals from driven and non-driven wheel transducers including a frequency comparator for determining the difference in wheel speeds, a variable duty cycle oscillator controlled by the wheel speed difference and a switching circuit in the vehicle engine ignition system responsive to the oscillator output to periodically interrupt engine ignition by an amount proportional to the wheel speed difference so that as excessive slipping of the driven wheels occurs the engine torque output is reduced to limit the wheel slip.

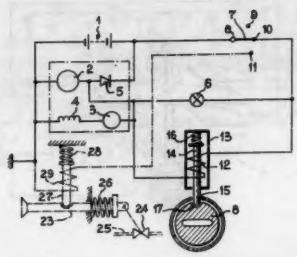
3,680,656

LOCK CONTROL DEVICE FOR A COMPRESSION-IGNITED INTERNAL COMBUSTION ENGINE

Andre Leger, Sartrouville, France, assignor to Automobiles Peugeot, Paris and Regie Nationale des Usines Renaults, Billancourt, France

Filed March 22, 1971, Ser. No. 126,405
Claims priority, application France, April 2, 1970, 7011955
Int. Cl. B60r *25/02*
U.S. Cl. 180—114 5 Claims

A control device for preventing the return of the contact key of the vehicle to its off position so long as the engine of the vehicle operates which would otherwise constitute a serious danger bearing in mind that the key simultaneously actuates an antitheft device which is usually employed to lock the steering gear of the vehicle. The device comprises locking means controlled by an electromagnet whose coil is connected in parallel to the battery charging circuit indicator.

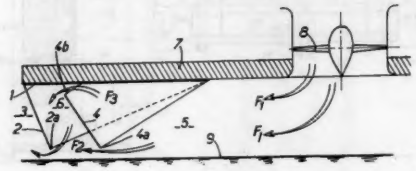


3,680,657

SKIRT FACILITY FOR A GROUND-EFFECT MACHINE

Charles Joseph Marchetti, Neuilly-sur-Seine, and Marc Henri Jean Faure, Saint-Maur-des-Fosses, both of France, assignors to Societe D'Etudes et de Development des Aeroglisseurs Marins Terrestres et Amphibies S.E.D.A.M., Paris, France

Filed Dec. 30, 1969, Ser. No. 889,166
Claims priority, application France, Dec. 30, 1968, 68182226
Int. Cl. B60v *1/16*
U.S. Cl. 180—121 11 Claims



An elementary cell adapted to be assembled together with other similar cells to form a compartmented-skirt facility for a ground-effect machine, the cell being formed by an outer wall element and inner wall element bounding together a substantially crescent-shaped space, such cell being adapted to be mounted and demounted individually on the structure of a ground-effect machine.

3,680,658

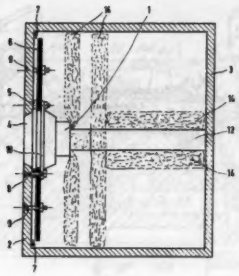
LOUDSPEAKER BOX FOR A PREFERABLY DYNAMIC LOUDSPEAKER

Helmut Goeskel, Liebenau/Weser, Germany, assignor to Neckermann Versand KGaA, Frankfurt, Main, Germany

Filed May 10, 1971, Ser. No. 141,665
Claims priority, application Germany, May 8, 1970, P 20 22 612.4
Int. Cl. G10k *13/00*; H04r *1/28*
U.S. Cl. 181—31 B 28 Claims

A cabinet for a loudspeaker, preferably a dynamic loudspeaker, comprises a front wall, a rear wall and a plurality of

side walls. A loudspeaker is mounted on a partition which is arranged behind the front wall and which is spaced from the front wall so as to define an annular gap which surrounds the rims of sound apertures defined by the front wall and the partition. Bracing means brace at least one pair of opposite walls of



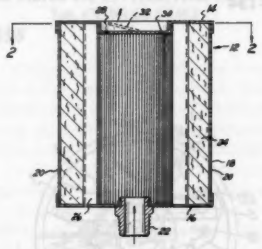
the cabinet and foam material defining at least one damping wall is disposed within the cabinet, to damp standing waves.

3,680,659

NOISE MUFFLER HAVING A UNIQUE PRESSURE SAFETY VALVE

Walter Kasten, Franklin, Mich., assignor to The Bendix Corporation

Filed Aug. 23, 1971, Ser. No. 173,756
Int. Cl. F01n 1/10, 3/02, 7/00
U.S. Cl. 181—36 A 3 Claims



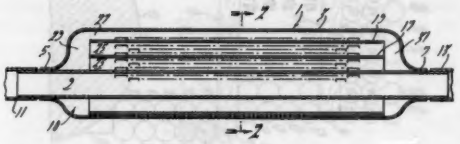
A muffler for reducing the noise level of a noise carrying gaseous flow having a fiberglass depth type filter and a pleated paper filter mounted within a metallic canister. The depth type filter has a sufficient thickness and density to break up an acoustic wave and thereby reduce the noise level accompanying a gas flow through the filter to a predetermined level. A groove is formed in one solid portion of the metallic housing. Gas flow introduced into the housing can reach this housing portion without passing through the filter. The groove weakens this portion of the housing so that it will rupture along the groove in response to too great a gaseous pressure. The groove has a half-circle shape so that the housing portions on opposite sides of the groove will only be bent during rupture. No part of the housing will be broken off during rupture and become a dangerous projectile.

3,680,660

MULTI-LOUVERED ROUGHNESS SILENCER

Bert DuBois, Brooklyn, Mich., assignor to Tenneco Inc., Racine, Wis.

Filed July 27, 1970, Ser. No. 58,393
Int. Cl. F01n 1/08, 7/18
U.S. Cl. 181—48 5 Claims



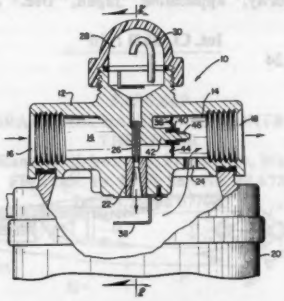
A muffler has a plurality of perforated tubes telescoped over a perforated gas flow tube to provide a series of expansion chambers connected in parallel with the gas flow path.

3,680,661

LUBRICATOR AND SENSOR VALVE THEREFOR

Arthur R. Dolegowski, Littleton, Colo., assignor to C. A. Norgren Co., Littleton, Colo.

Filed Oct. 6, 1970, Ser. No. 78,352
Int. Cl. F16n 7/34
U.S. Cl. 184—55 A 10 Claims



A lubricator for adding oil to an air stream characterized by a generally disc-shaped air flow sensor valve disposed in the air stream adapted to increasingly open with increased rate of air flow, further characterized by an annular convolution or fold in the disc-like member which serves as a loading spring for radially urging the periphery of the valve toward closed position.

3,680,662

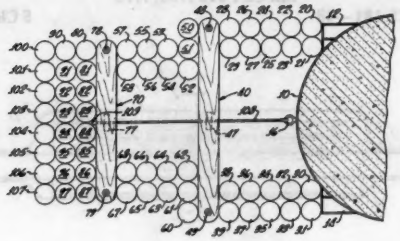
LIQUID SHOCK ABSORBING BUFFER

Grant W. Walker, Sacramento, and Duane B. Ford, Placerville, both of Calif., assignors to John Rich Enterprises, Inc., Dover, Del.

Continuation of Ser. No. 777,329, Nov. 20, 1968, abandoned.
This application June 22, 1970, Ser. No. 48,950
Int. Cl. E02b 3/22; F16f 5/00, 9/08
U.S. Cl. 188—1 B 22 Claims

A buffer construction for protecting fixed structures from collision by automobiles and the like is disclosed. The construction comprises a backing plate which is a part of, or associated with, the fixed structure, at least two laterally spaced apart clusters of buffer members, a movable vertical rigid diaphragm spaced from the backing member by the two clusters of buffer members and an additional cluster of buffer

members in front of the movable diaphragm. Several movable diaphragms may be used, each pair separated by one or more



clusters of buffer members. An anchor cable and a cable for repositioning the diaphragms is also disclosed.

3,680,663

DISK BRAKE FOR A BICYCLE

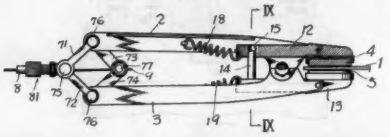
Masayoshi Kine, c/o Shimano Industrial Co. Ltd., No. 77, 3-cho, Oimatsu-cho, Sakai, Japan

Filed July 13, 1970, Ser. No. 54,363

Claims priority, application Japan, Dec. 23, 1969, 44/122801

Int. Cl. B62l 1/16

U.S. Cl. 188—24 **3 Claims**



A brake disk rotatable in synchronism with a wheel and arranged adjacent a bicycle frame to which a pair of brake arms constituting a force doubling mechanism substantially operable by a single lever are mounted to be swung at both sides of said brake disk, said brake arms being provided in one end with a pair of brake shoes and in the other end with a link device constituting a force doubling mechanism substantially operable by a toggle joint, and said link device being operable by wire rope means in the manner of securing the most reliable and effective braking contact of said brake shoes upon the brake disk with light manipulation touch.

3,680,664

BRAKE ADJUSTERS

Glyn Phillip Reginald Farr, Kenilworth, England, assignor to Girling Limited, Birmingham, Warwickshire, England

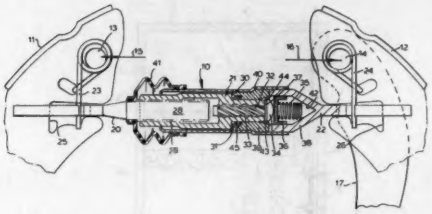
Filed Aug. 17, 1970, Ser. No. 64,518

Claims priority, application Great Britain, Aug. 21, 1969, 41,756/69

Int. Cl. F16d 65/56

U.S. Cl. 188—79.5 GT **16 Claims**

A slack adjuster for vehicle brakes has first, second, third and fourth members with a common thrust axis. The first and third members are non-rotatable and the second member has a non-reversible screw-thread connection with the first member and an abutment surface mating with a like surface on the third member. The fourth member has a reversible screw-thread connection with the second or the third member and a friction surface cooperating with a like friction surface



on the third or second member respectively. A spring acting on the fourth member biasses the fourth member to a resting position. A stop on the second or third member can replace this spring. When adjustment is required, this spring biasses the friction faces together and the reversible screw-thread connection causes the second member to be turned to take up the excess slack.

3,680,665

BRAKES

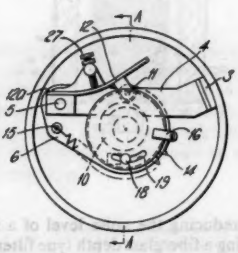
Richard William Harris, 115 Langton Way, London, S.E.3, England

Filed Aug. 19, 1970, Ser. No. 65,186

Claims priority, application Great Britain, Aug. 25, 1969, 42/190/69

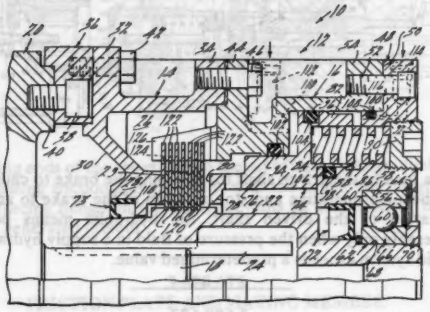
Int. Cl. B60t 7/12

U.S. Cl. 188—134 **6 Claims**



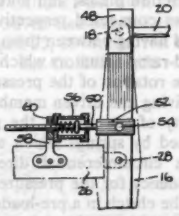
A brake for slowing down a reel of wrapper web when the demand for the web by the wrapping machine diminishes. The shaft of the reel of the web carries around with it by means of a spring a mounting for a brake arm. A cam on the reel shaft bears against a cam follower caused by the brake arm to apply the brake. Due to the spring, deceleration of the reel shaft (caused by diminished tension in the wrapper web) allows the cam to rotate relative to the follower so that the brake is applied harder.

3,680,666
MOTOR BRAKE UNIT
Gordon M. Sommer, Grosse Pointe Woods, Mich., assignor to G. M. Sommer Co., Inc., Detroit, Mich.
Filed Jan. 8, 1970, Ser. No. 1,358
Int. Cl. F16d 65/24
U.S. Cl. 188—170 8 Claims



A motor brake unit comprising a relatively non-rotatable housing, a collar member adapted to rotate with the motor drive shaft, a plurality of rotatable discs connected to the collar member, a plurality of non-rotatable discs disposed adjacent the rotatable discs, and mounted on the housing, means for supporting at least some of the discs for axial movement toward and away from other of the discs, and actuating means for selectively moving said movable discs into frictional engagement with the non-rotatable discs, during a braking operation.

3,680,667
BRAKING APPARATUS
Robert L. Ludington, 3419 Manitou Trail, and Robert M. Holloway, 921 N. Roeske Trail, both of Michigan City, Ind.
Filed March 15, 1971, Ser. No. 124,306
Int. Cl. F16d 65/62
U.S. Cl. 188—198 8 Claims

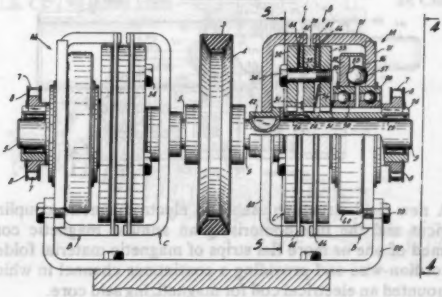


Braking apparatus for use on a railway car including an air cylinder, a piston push rod carried by the air cylinder, a live lever pivotally connected to the piston push rod, first linkage means connected to the live lever and a first pair of brake shoes connected to the linkage means, a slack adjuster connected to the live lever, a center rod actuatable by the live lever, a dead fulcrum lever connected to the center rod, second linkage means connected to the dead fulcrum lever and a second pair of brake shoes connected to the second linkage means, a control rod actuatable by the live lever and an overtravel compensating device mounted on the control rod which is engaged by activating means extending from the slack adjuster.

3,680,668
SUIT-CASE LOCK COVER
Dino Valaguzza, Via Palestro 22, Milan, Italy
Filed Aug. 14, 1970, Ser. No. 63,703
Claims priority, application Italy, April 9, 1970, 23092 A/70
Int. Cl. A45c 3/00, 13/00
U.S. Cl. 190—49 3 Claims

A suit-case comprising two half shells hinged on each other, one of which carries along its edge a section, such as aluminum having parallel ribs defining grooves.

3,680,669
CLUTCH-BRAKE MECHANISM AND CONTROL SYSTEM THEREFOR
Quinten A. Hansen, Highway 38, Franksville, Wis.
Filed Dec. 14, 1970, Ser. No. 97,678
Int. Cl. F16d 67/02
U.S. Cl. 192—18 R 24 Claims

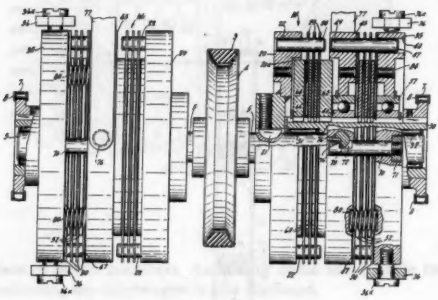


A clutch-brake mechanism in which the brake is disengaged while the clutch is engaged and vice-versa. Parts of the clutch and brake are connected together and are simultaneously actuated by a single actuating member and the arrangement is such that the device is very compact particularly in an axial direction. A power transmission including a pair of such mechanisms and separate steering and brake control systems both of which are connected separately to the mechanisms.

3,680,670
CLUTCH-BRAKE MECHANISM AND MOUNTING, AND CONTROL SYSTEM THEREFOR

Quinten A. Hansen, Highway 38, Franksville, Wis.

Filed Dec. 14, 1970, Ser. No. 97,896
Int. Cl. F16d 67/02
U.S. Cl. 192—18 R 13 Claims

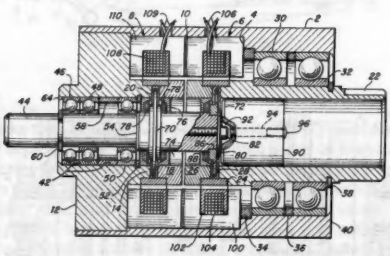


A clutch-brake mechanism in which the brake is disengaged while the clutch is engaged and vice-versa. The mechanism is mounted in such a manner that the common shaft on which the pair of mechanisms is mounted together with an intervening driven sheave is not subjected to bending or twisting regardless of the pivoting of the vehicle frame relative to the mechanisms and driven sheave. A power transmission including a pair of such mechanisms with separate steering and brake control systems, each of which are connected separately to each of the mechanisms.

3,680,671
MAGNETIC DEVICES

James R. Hendershot, and Robert F. Searle, both of Amherst, N.H., assignors to Vibrac Corporation, Chelmsford, Mass.

Filed July 28, 1970, Ser. No. 58,846
Int. Cl. F16d 37/02
U.S. Cl. 192—21.5 21 Claims



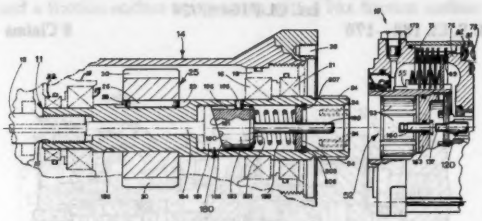
A new field structure usable in electromagnetic coupling devices and the like comprising an annular magnetic core formed of one or more flat strips of magnetic material folded accordion-wise and providing a continuous channel in which is mounted an electrical coil for magnetizing said core.

3,680,672
BRAKE FOR STOPPING A BROKEN DRIVEN SHAFT

Jack McCurley, Dallas, Tex., assignor to LTV Electrosystems, Inc., Dallas, Tex.

Filed Aug. 17, 1970, Ser. No. 64,486
Int. Cl. B60t 7/14; F16d 59/02, 55/40
U.S. Cl. 192—8 R 16 Claims

A control or brake apparatus for stopping or arresting rotation of a driven shaft which includes brake means operable hydraulicly to release the brake apparatus to permit rotation of the driven shaft and a releasable lock means operable upon the breaking of the driven shaft at a location between its connection with a driving shaft and the location of the application

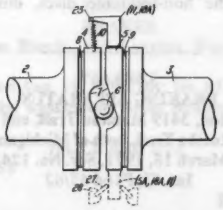


of a load to the driven shaft for releasing the brake to cause it to become operative and stop rotation of the brake to arrest rotation of the driven shaft, the hydraulic means being operably only when the pressure of fluid in a supply hydraulic fluid system exceeds a predetermined value.

3,680,673
CLUTCHES

Oswald Webb, Whitley, England, assignor to Harry Ferguson Research Limited

Filed Oct. 21, 1970, Ser. No. 82,665
Claims priority, application Great Britain, Oct. 22, 1969, 51,666/69
Int. Cl. F16d 13/04
U.S. Cl. 192—41 6 Claims



Various embodiments of overrunning clutches are described. Each clutch is of the type which incorporates mutually interleaved friction plates; and mutually separable annular pressure plates connected respectively to driving and driven members and having between them actuating means in the form of ball-and-ramp actuators which are sensitive to the direction of relative rotation of the pressure plates and consequently of the driving and driven members. In order to improve the sensitivity of the clutch, the pressure plates are lightly spring biassed by springs which act on the pressure plates in opposite circumferential directions which correspond with a tendency for the pressure plates to separate. The springs place the clutch in a pre-loaded condition and so improve the sensitivity, and also take up wear which may occur in the friction plates or pressure plates. Embodiments incorporating both tension and compression spring are described.

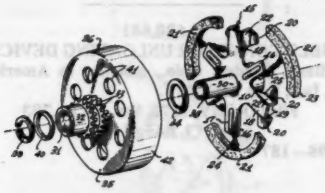
3,680,674
CENTRIFUGAL CLUTCH

Gilbert F. Horstman, 730 E. Huntington Dr., Monrovia, Calif.

Continuation-in-part of Ser. No. 754,754, Aug. 19, 1968, abandoned. This application June 22, 1970, Ser. No. 48,357
Int. Cl. F16d 23/10
U.S. Cl. 192—105 BA 8 Claims

A drive hub carries a sheet metal spider having integrally formed first and second sets of spaced arms shaped to slidably

constrain a set of clutch shoes for radial movement into and out of engagement with a cylindrical drum. Springs normally bias the shoes toward radially inner positions against driving portions of the spider, the driving portions slidably engaging



trailing ends of the shoes to cam the set of shoes into gradually increasing frictional engagement with the drum. An integral reinforcing flange on the drum prevents its distortion by the heat generated therein.

3,680,675

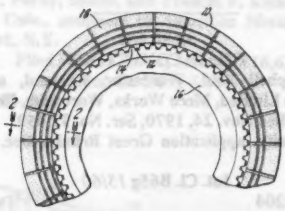
FRICTION PLATE AND MATING MEMBER

William G. Livezey, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1970, Ser. No. 88,066

Int. Cl. F16d *13/60*

U.S. Cl. 192—107 R **4 Claims**



A friction plate member having teeth provided with a pressure angle different from that of the teeth of a mating member.

3,680,676

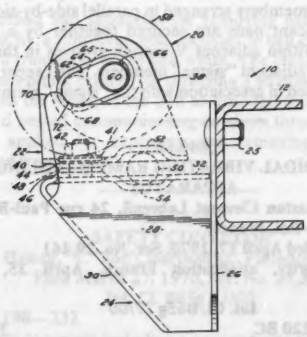
ROLLER GUIDE FOR BOAT TRAILER

Raymond P. Smith, 30785 Red Maple Lane, Southfield, Mich.

Filed April 23, 1971, Ser. No. 136,850

Int. Cl. B60p *1/52*

U.S. Cl. 193—42 **15 Claims**



A boat trailer guide roller device with a roller mounted for free rotation on its longitudinal axis and movement transverse to its axis in a frame carried by a base for pivotal movement about an axis generally perpendicular to both the longitudinal axis and direction of transverse movement of the roller. The roller in one transverse position provides a self-centering caster as a boat is loaded and in the other transverse position a nonswiveling roller as the boat is unloaded.

3,680,677

CONVEYING OF GLASS SHEETS

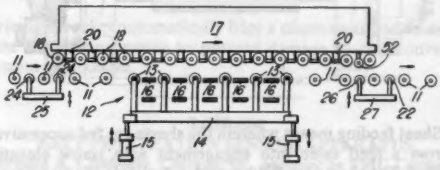
Geoffrey Hindle Branch, Goldborne, near Warrington; James Edward Hall, Billinge, near Wigan; Kenneth Bickerstaff, St. Helens, and Albert Patrick Russell-Rayner, Southport, all of England, assignors to Pilkington Brothers Limited, Liverpool, England

Filed Sept. 18, 1970, Ser. No. 73,554

Claims priority, application Great Britain, Sept. 19, 1969, 46,410/69

Int. Cl. B65g *47/00, 37/00*

U.S. Cl. 198—20 **10 Claims**



Glass sheets are conveyed in sequence along a main line conveyor which includes means for diverting sheets from the main line conveyor on to branch line conveyors. Selectively operable suction transfer means is provided over the junction of each branch line with the main conveyor, and is operable to lift and convey a sheet over the junction so that it continues along the main conveyor.

3,680,678

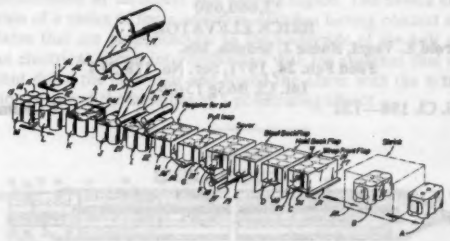
METHOD AND APPARATUS FOR GROUPING CONTAINERS ON A CONVEYOR

Robert H. Ganz, 8 Ridge Crest Rd., Saddle River, N.J.

Division of Ser. No. 47,996, June 22, 1970. This application July 30, 1971, Ser. No. 167,564

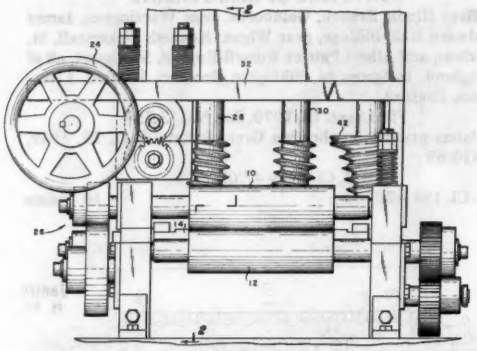
Int. Cl. B65g *47/26*

U.S. Cl. 198—34 **24 Claims**



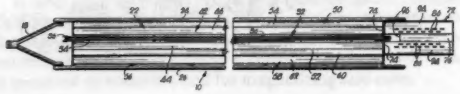
The invention contemplates method and apparatus for the rapid and efficient formation of clusters of articles, such as beverage containers, as a preliminary to wrapping, as with shrinkable plastic film or sheet. The containers are received at one end of a production line in random succession, and are converted into groups or clusters appropriate for packaging, with the maximum dimension of the cluster transverse to the direction of conveyor movement. The clusters are then, in the course of their continuous movement along the conveyor, enveloped with sheet material.

3,680,679
SHEET FEED MECHANISM
Karl Friedrich Lehmann, Murray Hill, N.J., and Robert Miller Weygant, Waukegan, Ill., assignors to American Can Company, Greenwich, Conn.
Filed Dec. 21, 1970, Ser. No. 100,092
Int. Cl. B65g 37/00
U.S. Cl. 198—104 8 Claims



Sheet feeding means wherein the sheets are fed successively across a feed table into engagement with screw elevating means. The sheets are fed beneath a first pair of screw elevating means which are suspended above the feed table. In one form of the invention, the sheets are fed directly into engagement with a second pair of screw elevating means and the trailing edges of the sheets are lifted by continuously rotating cam means into engagement with the first pair of screw elevating means. In another form of the invention, the sheets are fed beneath the suspended pair of screw elevating means into a stop means which also function to lift the leading edges of the sheet into another pair of screw elevating means. The trailing edge is lifted into engagement with the suspended pair of screw elevating means as in the first embodiment. In each embodiment, after a sheet has been elevated, it is fed out of engagement with the screw elevating means at right angles to its feed into the screw elevating means. The embodiment employing the stop means also incorporates a sheet reject mechanism in which the stop means are pivoted out of the way of an oncoming sheet which has been previously detected to be defective.

3,680,680
BRICK ELEVATOR
Harold E. Vogel, Route 2, Sedalia, Mo.
Filed Feb. 24, 1971, Ser. No. 118,314
Int. Cl. B65g 15/00
U.S. Cl. 198—132 4 Claims

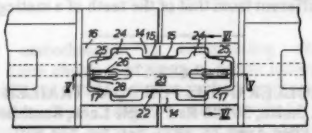


An elevator for brick, cinder block, or other types of construction materials which are to be moved from a point of storage and loading to a point of unloading and use, the elevator having a support assembly to position the same in an inclined position, there being a trackway defining a trough and a series of spaced platforms, there being a driven chain which rides in said trough and has lugs extending upwardly beyond the horizontal plane of the platforms whereby the materials placed on the platforms may be conveyed from a point of loading to a point of unloading. At the point of unloading the elevator is provided with an extension hingedly attached thereto, the extension presenting a pair of spaced ramps, each having a plurality of rollers carried thereby whereby to permit the movement of materials therealong to a point of rest until such time as they are removed from the extension.

3,680,681
BELT CONVEYOR UNLOADING DEVICE
Snell G. Burk, Golden, Colo., assignor to American Metal Climax, Inc., New York, N.Y.
Filed Oct. 19, 1970, Ser. No. 81,783
Int. Cl. B65g 15/28
U.S. Cl. 198—187 9 Claims

Apparatus for selectively removing bulk material from a moving conveyor comprises means located along the conveyor between the loading point and head pulley, which, when operated, raises the longitudinal intermediate region of the conveyor above its side regions at any one of a group of selected stations along the conveyor, thereby to cause material carried on the conveyor to be discharged at a selected station.

3,680,682
CHAIN CONVEYORS
Thomas Campbell Paul, Worcester, England, assignor to Dowty Meco Limited, Meco Works, Worcester, England
Filed Nov. 24, 1970, Ser. No. 92,459
Claims priority, application Great Britain, Dec. 13, 1969, 60,898/69
Int. Cl. B65g 15/60
U.S. Cl. 198—204 4 Claims

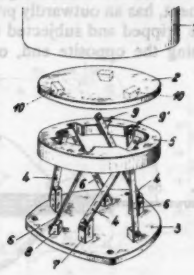


A conveyor having a plurality of pans secured together in end to end relationship, each pan comprising a pair of so-called "sigma" members arranged in parallel side-by-side relation. Two adjacent pans are secured together by a keeper device fitting within adjacent V-section grooves in the outer surfaces of two adjacent "sigma" members. The keeper device is loosely retained in association with the "sigma" members.

3,680,683
HELICOIDAL VIBRATING RAMP HANDLING APPARATUS
Jean-Claude Gaston Clement Lebreuil, 24 rue Paul-Bert, 94 Villeneuve-le-Roi, France
Filed April 17, 1970, Ser. No. 29,461
Claims priority, application France, April 25, 1969, 6913218
Int. Cl. B65g 27/00
U.S. Cl. 198—220 BC 3 Claims

Handling apparatus of the type comprising a vibrating trough, provided with a helicoidal transport ramp and connected to a frame by means of elastically deformable systems,

characterized in that the elastically deformable systems are formed, in their simplest form, by spring blades all attached by one of their extremities to a base, of light construction, and by



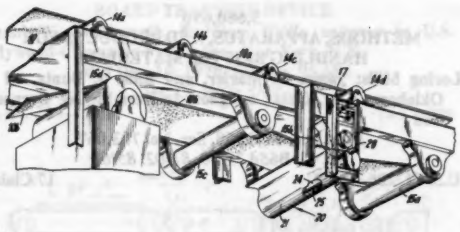
the other alternately to the vibrating trough, or useful mass, and to a reaction mass arranged beneath said trough so that the latter and said reaction mass have a common axis of symmetry.

3,680,684

METHOD AND APPARATUS FOR CLEANING CONVEYOR BELTS

Richard A. Purdy, Salida, and Thomas F. Rutledge, Leadville, both of Colo., assignors to American Metal Climax, Inc., New York, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,629
Int. Cl. B65g *45/00*
U.S. Cl. 198—230 7 Claims



A method and apparatus for removing particulate matter retained by a conveyor belt includes a belt-cleaning station disposed transverse to the belt width. The cleaning equipment comprises plural orifices for directing a stream of compressed air across the width of the belt to dislodge the retained particles, and nested communicating conduits through which suction is applied for capturing and removing the particles dislodged from the belt.

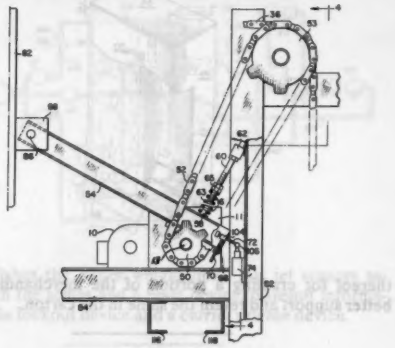
3,680,685

SAFETY CONVEYOR

Murray Halton, "C" and Clearfield St., Philadelphia, Pa.

Filed March 27, 1970, Ser. No. 23,309
Int. Cl. B65g *43/00*
U.S. Cl. 198—232 9 Claims

A safety conveyor including a gear reducer drive for powering a driving sprocket to drive an endless chain for load transporting purposes. The gear reducer drive rotates the driving sprocket through a drive shaft which includes a flexible coupling to permit elevation of the driving sprocket in response to a jam in the conveyor mechanism. Elevation of the driving sprocket automatically trips a micro switch to de-energize the driving motor to prevent damage to any conveyor system component.

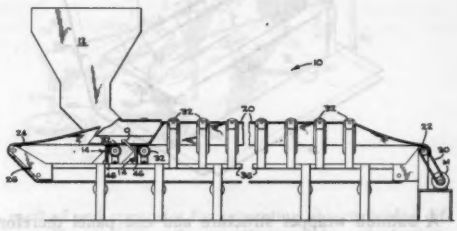


3,680,686

BELT PENETRATION SENSING APPARATUS

Bernard A. Ciesielski, Chicago, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 12, 1971, Ser. No. 114,923
Int. Cl. B65g *41/00*
U.S. Cl. 198—232 4 Claims



A device to protect a conveyor belt from tearing after penetration by an object at a loading region. The device consists of a series of force-sensitive switches having contact surfaces that are perpendicular to the underside of the belt and an electrical circuit interconnected with the switches that will shut down the conveyor and sound the alarm with the actuation of one of the switches by a penetrating object.

3,680,687

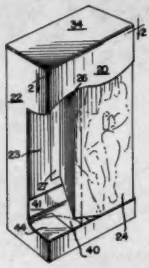
DISPLAY CARTON

Joseph R. D'Alessio, Lucky Lane, Washingtonville, N.Y., assignors to Federal Paper Board Company, Inc., Montvale, N.J.

Filed June 1, 1970, Ser. No. 41,806
Int. Cl. B65d *5/50, 5/48*
U.S. Cl. 206—45.14 15 Claims

A shadow box style carton for merchandise, such as a product packaged in a tube or bottle, which carton is formed from a single paperboard blank and which is in the form of a tube with end closure flaps and a partially open front or top through which the merchandise may be viewed, with a portion forming a panel extending inwardly in a diagonal plane from a hinged connection at one side of the opening and connected to an inside wall remote from the hinged connection at the side of the opening so as to leave space for the merchandise

and provide display receiving panel space alongside the same. The diagonal panel may have an extension on a portion



thereof for cradling a portion of the merchandise so as to better support and retain the same in the carton.

3,680,688

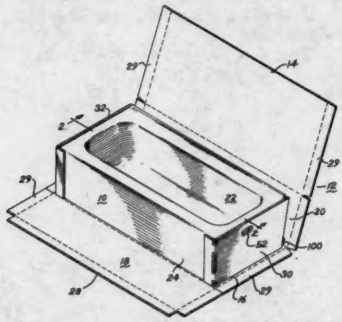
BATHTUB WRAPPER STRUCTURE

Richard K. Smith, 4150-35 Ridge Rd., Benton Harbor, Mich.

Filed Dec. 28, 1970, Ser. No. 101,474

Int. Cl. B65d *85/00*

U.S. Cl. 206—46 H **14 Claims**



A bathtub wrapper structure and end panel therefor in which the end panel consists of two or more layers of paperboard or the like in side-by-side relation. The sections are joined to one another by a hinge means which permits the sections to be folded in such a manner as to adapt the end panel for use at either end of the bathtub wrapper. One section may be shorter than the other and form a recessed upper edge for engaging the upper flange of the tub and supporting the tub in the wrapper structure. Tabs may be provided on the front edge of one or more of the panel sections and on the upper edge of one of the sections for forming cushions along the front and the top of the tub.

3,680,689

ENCLOSURE WITH PROGRESSIVELY DESTRUCTIBLE SEAL

Friedrich Grundschober, Onex/Geneva; Erhard Wychera, Carouge/Geneva, and Jean Paul Carriere, Geneva, all of Switzerland, assignors to Aktiebolaget Stadex, Malmo, Sweden

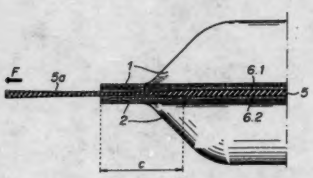
Filed July 15, 1970, Ser. No. 55,094

Claims priority, application Switzerland, July 18, 1969, 11010/69

Int. Cl. B65d *81/32*

U.S. Cl. 206—47 A **13 Claims**

A receptacle serving for the storage of one or more dispensable substances has two wall portions interconnected along a barrier zone of more or less constant width by a destructible seal formed at least in part from an elongate member which is extensible in its longitudinal direction and adheres, directly or through an interposed bonding layer, to the two wall portions while extending over the full width of that zone. This extensible member, e.g. an elastic tape or an undulating filament, has an outwardly projecting extremity by which it may be gripped and subjected to a longitudinal pull gradually reaching the opposite end, or some intermediate



clamping point, upon progressive detachment of the member from the wall portions bracketing it. With the receptacle in the form of a flexible envelope subdivided by the barrier zone into two compartments containing respective components of a hardenable mixture, a partial rupture of the seal allows the components to be intermixed within the envelope in the region of the resulting gap whereupon the envelope may be partly cut open for removal of the mixture, except for a residue left to reseal the envelope beyond the gap before further utilization.

ERRATUM

For Class 206—59 see:
Patent No. 3,681,190

3,680,690

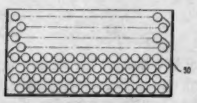
METHODS, APPARATUS, AND PRODUCTS FOR HANDLING BRITTLE MATERIALS

Loring Mills; James V. Marler, and Billie J. Buntz, all of Oklahoma City, Okla., assignors to Kerr-McGee Corporation

Filed Dec. 11, 1968, Ser. No. 783,067

Int. Cl. B65d *71/00, 81/02, 85/62*

U.S. Cl. 206—65 R **17 Claims**



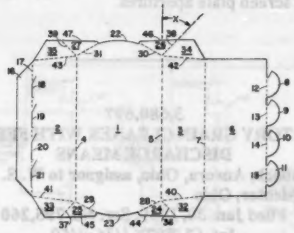
Methods and apparatus for automated packing, shipment, and unpacking of components of brittle material, such as uranium oxide pellets. Enclosures for individual pellets provide support over a substantial portion of a pellet with a minimum of contact on the pellet edges and provide cushioned protection for pellet surfaces and edges. Continuous wide belt packaging of pellets permits subdivision into flat slabs. Shipping containers conforming in length and width to the flat slab length and width dimensions accommodate a plurality of layers of pellets dependent upon safe density requirements of the material. This flat slab packaging method permits single-layer shipment of containers of flat-slab packaged uranium oxide without limitation because of safe density requirements on the area of the single-layer shipment.

3,680,691

PACKAGE HAVING CORNER WEB STRUCTURE

Joseph H. Lock, Mableton, Ga., assignor to The Mead Corporation

Filed Jan. 23, 1970, Ser. No. 5,282
Int. Cl. B65d 71/00
U.S. Cl. 206—65 R 1 Claim



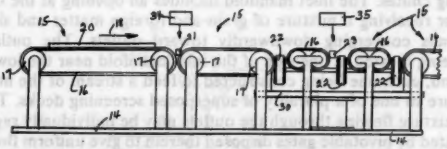
A package for a plurality of articles having tapered side walls and disposed in side by side relation in at least one row to form a rectilinear arrangement incorporates a wrapper having spaced top, bottom and side walls interconnected to form an open ended tubular structure. A unitary corner web is foldably joined to the end edges at each corner of the top wall and to an anchoring flap which in turn is foldably joined to each end edge of each side wall. Each web is unitary and devoid of weakening fold lines and preferably is of triangular configuration. The bias forces are such that the end edges of the top wall are biased downwardly and the top corners of the package are braced upwardly in such manner as to preclude crushing of the upper corners of the package due to external forces applied thereto and the lower edge of each web is arranged to afford a gentle cushioning action whereby the articles are prevented from becoming dislodged through the ends thereof.

3,680,692

BOARD TRANSFER DEVICE

Ronald W. Southworth, Redding, Calif., assignor to U.S. Plywood-Champion Papers Inc., New York, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,684
Int. Cl. B07c 5/08
U.S. Cl. 209—74 M 12 Claims



A transfer device which lifts a board from a conveyor and moves it to one side for storage purposes. A sensing means is provided which controls the transfer means so that the board is engaged when it is midway over the transfering means. A photoelectric sensor measures the length of the board and a rejection means is provided for eliminating boards that are too large or too short.

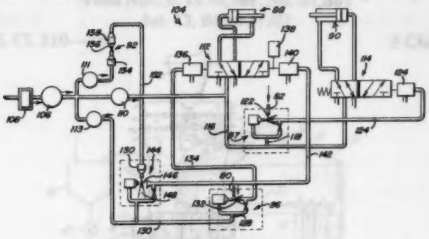
3,680,693

FLUID CONTROL SYSTEM FOR SELECTOR SCALES

William F. Altenpohl, and Paul J. Altenpohl, both of Union Hill Rd., West Conshohocken, Pa.

Filed Oct. 16, 1970, Ser. No. 81,373
Int. Cl. B07c 5/16
U.S. Cl. 209—75 11 Claims

Fluid controls actuated by a pair of weighing scales, effect removal of poultry from carriers conveyed along a track, at a release station corresponding to one of the scales through which a lower weight limit is established. The poultry carriers pass initially through a first memory station at which the other



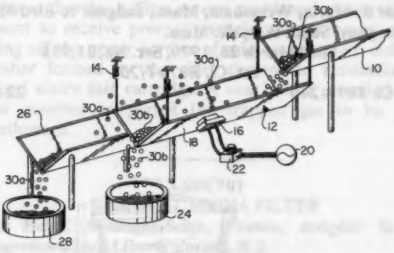
scale establishes the upper weight limit. Air jet sensors associated with the scales and a reset device, transmit information to a scale lockout device and a carrier release device.

3,680,694

METHOD AND APPARATUS FOR SEPARATING OBJECTS HAVING DIFFERENT RESILIENCIES

Donald D. Hamann, Raleigh, N.C., assignor to Research Corporation, New York, N.Y.

Filed May 27, 1970, Ser. No. 40,919
Int. Cl. B07b 13/10
U.S. Cl. 209—119 4 Claims



A method and apparatus for separating objects having different resiliencies according to the modulus of elasticity thereof. The objects are passed through a zone and are transversely vibrated at a selected frequency and amplitude to eject those objects having the higher natural frequencies of vibration.

3,680,695

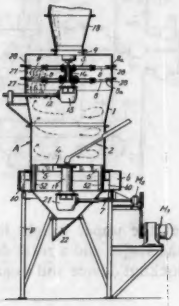
GAS-SEPARATING METHOD AND APPARATUS THEREFOR

Nobuo Yoshimori; Tsuguo Nagayama, and Toshio Sato, all of Tokyo, Japan, assignors to Kabushiki Kaisha Sato Seisakusho, Ohta-ku, Tokyo, Japan

Filed Nov. 28, 1969, Ser. No. 889,013
Int. Cl. B07b 7/083
U.S. Cl. 209—139 A 6 Claims

The invention relates to a method of separation of particulate material using a fluid and an apparatus therefor wherein first whirling vanes are used to disperse a material-charged gas supplied into the central part of a casing and float this material in a whirling ascending current fed to the bottom part of the casing, providing a first separating effect due to the gravity acting on the rising current, leading the charged gas to an upper outlet, and providing the second separating effect due to second whirling vanes in the course of said whirling ascent, said second whirling vanes being located above and spaced from said first whirling vanes, as well as guiding to the lower

part of the casing, the separated heavy particles which are descending from the upper part of the casing. A third separating effect is also provided due to the first whirling vanes dispersing and supplying the inflowing charged materials to



falling rough particles which are led to the lower part of the casing so as to separate fine powders mixed in rough particles, and as a result of this continuous sequence of separating steps, the work flows smoothly and efficiently.

3,680,696

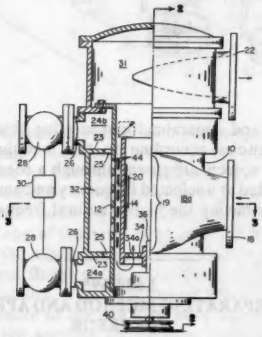
SCREENING

Dennis R. Morin, Wrentham, Mass., assignor to Bird Machine Company, South Walpole, Mass.

Filed March 23, 1970, Ser. No. 21,935

Int. Cl. B07b *1/20*

U.S. Cl. 209—240 **22 Claims**



Screening apparatus capable of making a sharp separation based on size of solids in fluid pulp has a screen cleaning rotary drum wall disposed adjacent to a screen plate. According to one aspect of the invention the rotor and screen plate form an accepts zone, the drum wall having sloped pulse-generating surface portions that sweep fully across the effective apertures of the screen plate, producing fluid pulses that act to dislodge over-size solids from the apertures, the accepts fluid flowing with an axial component along the rotor wall as it flows toward the removal outlet. Preferred embodiments include an inward flow machine, with rotor within a cylindrical screen plate; rotor cross-sections identical in planes through all apertures in the screen plate; curved rotor surface portions, e.g., elongated cylindrical sections or smooth lobes; flat rotor surface portions sloped relative to the rotor circular path; narrow axially extending screen apertures; rotor which aids in driving accepts fluid into the accepts outlet; inlet spreading of stock over the full length of screen toward rejects outlets at opposite ends and other important details. According to another aspect of the invention mutual extensions of screen plate and rotor surface combinations beyond the apertured region of the plate preserve the full intensity of positive or negative pulses in the end rows of screen plate apertures.

3,680,697

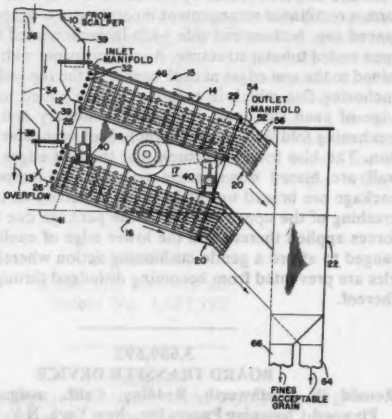
VIBRATORY GRAIN CLEANER WITH FEED AND DISCHARGE MEANS

Louis E. Hubach, Aurora, Ohio, assignor to W. S. Tyler Incorporated, Mentor, Ohio

Filed Jan. 30, 1969, Ser. No. 795,260

Int. Cl. B07b *1/36, 1/50*

U.S. Cl. 209—240 **12 Claims**



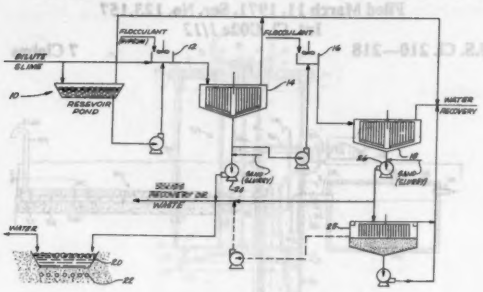
A grain cleaner including, in series, an inlet manifold, vibrating apparatus, an outlet manifold and vertically extending chutes. The inlet manifold includes an opening at the top for receiving a mixture of grain and foreign matter and side walls converging downwardly toward outlets. The outlets being located at one side of the inlet manifold near the lower end, each one being constructed to feed a stream of the mixture to one of a plurality of superposed screening decks. The mixture flowing through the outlets may be individually regulated by pivotable gates disposed therein to give uniform flows to each deck. Each deck includes a screen superposed over a pan. Whole grains are retained above the screen and fines consisting of foreign matter, broken grains, and undersized grains fall through the pores of the screen onto the pan. A vibrator is operatively assembled to shake the box and its contents at an acceleration of at least four times that of gravity and to exert a throw on the fines which is adequate to cause them to strike the underside of the screen and dislodge any material blinding any of the openings. The outlet manifold includes two outlets from each deck. One outlet is disposed to receive the grain which is retained on the screen. The other outlet is disposed to receive the fines on the pan. A passage in the outlet manifold adjoins each of the outlets and baffles are provided therein to horizontally deflect the grain or fines into different vertically extending chutes. Below the outlet manifold, the chutes are structured to laterally deflect the grain in one direction and the fines in another direction whereby all the grain will empty into a single duct and the fines will empty into another single duct.

3,680,698

PROCESS FOR THE TREATMENT OF SLIMES AND WASTE SOLIDS

Tung Liu, Claremont, and David R. Stern, Fullerton, both of Calif., assignors to Occidental Petroleum Corporation

Filed Feb. 25, 1970, Ser. No. 14,162
Int. Cl. C02b *1/20*
U.S. Cl. 210—46 27 Claims



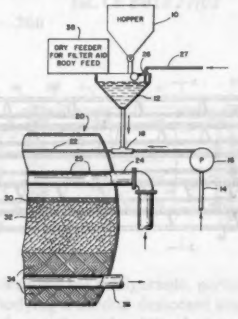
Fine solids contained in liquids are more effectively compacted to a handleable state by the addition of a liquid coagulant reaction mass to flocculate the solids followed by settling the flocculated solids with slow agitation to compact the solids and form a clarified liquid. Additional liquid may then be extracted from the compacted solids by slowly agitating the solids while in contact with a sand filter. Alternatively, the addition of sand to the flocculated solids results in the formation of a homogeneous, highly porous aggregate which rapidly compacts, without agitation, to a high solids density.

3,680,699

METHOD OF WATER FILTRATION

Donald Reid MacPherson, Rocky Hill, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Filed July 17, 1970, Ser. No. 55,852
Int. Cl. B01d *37/02*
U.S. Cl. 210—75 11 Claims



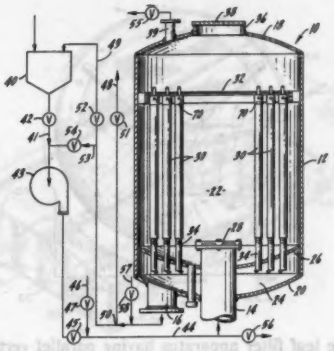
Water is clarified by passage through a sand filter having a thin precoat layer of coarse, porous, granular material such as flux-calcined diatomaceous earth. The material in the precoat layer should be coarser than the top layer of sand in the sand filter, and preferably comprises 8 to 100 mesh particles. A body feed of coarse, porous, granular materials may be added to the water to be clarified if a substantial amount of colloidal or particulate material must be removed.

3,680,700

METHOD OF PRECOATING A FILTER CARTRIDGE

Leo F. Ryan, Somerville, N.J., assignor to Ecodyne Corporation

Filed Nov. 9, 1970, Ser. No. 87,661
Int. Cl. B01d *37/02*
U.S. Cl. 210—75 5 Claims



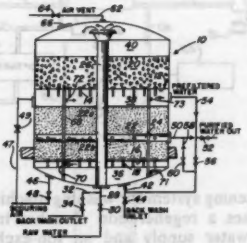
An improved precoat filter cartridge and a method of applying the precoat medium thereto. The filter cartridge comprises: a vertically extending tubular core element having apertures therein; a filter screen positioned about said core element to receive precoat particles; and a cover member closing off the upper portion of said core element defining a chamber formed by the sides thereof to accumulate gas trapped within said cartridge. A vent hole is provided in said cover member to permit the trapped gas to be vented therethrough.

3,680,701

R. H. DUAL MEDIA FILTER

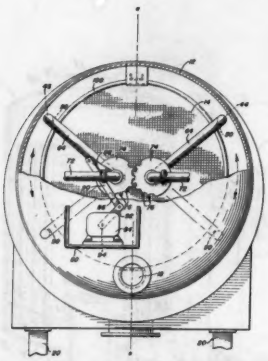
Radu Holca, Boulogne-Seine, France, assignor to Gulf Degremont, Inc., Liberty Corner, N.J.

Continuation-in-part of Ser. No. 805,407, March 10, 1969, abandoned. This application March 29, 1971, Ser. No. 128,715
Int. Cl. B01d *29/08*
U.S. Cl. 210—80 17 Claims



A filter contains in a single housing a coarse granulation layer and at least one fine granulation layer down-stream from the coarse-granulation layer so that liquid to be filtered passes downwardly through the coarse layer and then through the fine layer and backwash means are provided for passing the backwash upwardly through the fine layer and then the coarse layer.

3,680,702
FILTER CLEANING SYSTEM
Seymour Weinstein, 1012 Dobson, Evanston, Ill.
Filed Nov. 9, 1970, Ser. No. 87,841
Int. Cl. B01d *29/38, 29/34*
U.S. Cl. 210—81 5 Claims

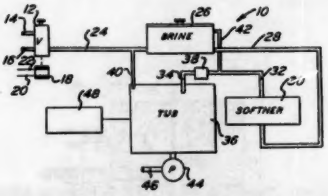


Pressure leaf filter apparatus having parallel vertically arranged filters with sluicing pipes on opposite sides of the filter for directing a high pressure spray of sluice liquid against the suspended solids cake formed on each filter. The sluicing pipes are pivoted with butterfly-type synchronized oscillation to provide an undercutting action on the cake as both pipes move upwardly.

ERRATUM

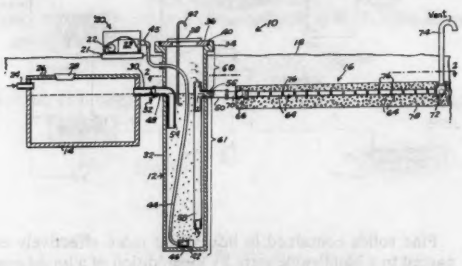
For Class 210—94 see:
Patent No. 3,681,562

3,680,703
WATER-SOFTENING AND REGENERATION PROCESS
Stuart Borochaner, Levittown, Pa., assignor to National Water Pure Corporation, Burlington, N.J.
Division of Ser. No. 852,293, Aug. 22, 1969. This application March 26, 1971, Ser. No. 128,313
Int. Cl. B01d *15/04*
U.S. Cl. 210—136 2 Claims



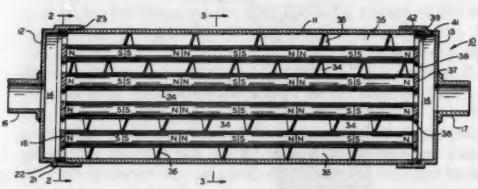
A water-softening system for washing machines and the like which comprises a regeneration chamber in direct circuit between the water supply and an ion-exchange chamber which is, in turn, in direct circuit with the washing machine tub. Normally, there is no regeneration material in the regeneration chamber so that water flows directly through to the ion-exchange chamber, where it is softened, and then into the tub. When it is necessary to regenerate the ion-exchange resin, regeneration material, either granular or fluid, is inserted into the regeneration chamber and the water from the source is permitted to flow for a brief interval sufficient to carry the regeneration material into the ion-exchange chamber. It is permitted to stay in the ion-exchange chamber for sufficient time to regenerate the ion-exchange resin and is then flushed out through the tub into the drain. No special control valves or other control means are necessary for the regeneration cycle.

3,680,704
OZONE SEWAGE TREATMENT APPARATUS
Richard J. Schaefer, 16852 Murray Hill Ave., Detroit, Mich.
Filed March 11, 1971, Ser. No. 123,157
Int. Cl. C02c *1/12*
U.S. Cl. 210—218 7 Claims



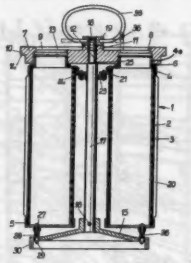
An apparatus for secondary treatment of sewage effluent with an ozone contact chamber connected to a tile field with a vent to the atmosphere at a point remote from the connection to the chamber. A generator produces ozone in compressed air which is discharged into sewage effluent in the chamber and passes through the tile field and vent to the atmosphere to treat the sewage effluent in both the chamber and the tile field.

3,680,705
MAGNETIC STRUCTURE FOR TREATING LIQUIDS CONTAINING CALCAREOUS MATTER
George M. Happ, and Merill F. Kottmeier, both of 5800 Dempster St., Morton Grove, Ill.
Filed Feb. 25, 1970, Ser. No. 14,036
Int. Cl. B01d *35/06*
U.S. Cl. 210—222 1 Claim



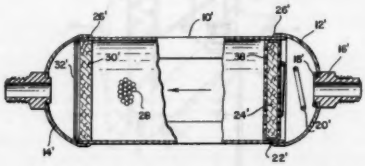
A structure for subjecting liquids having a dissolved and suspended calcareous content to magnetic lines of force. The liquid is caused to pass around a number of permanent magnets developing lines of force through which the liquid moves in a path intersecting such lines of force. This is achieved by mounting the magnets in a non-ferrous carrier with the poles thereof in opposed relationship, i.e., north to north, and south to south. The liquid is confined in such a manner so that it has a number of substantially helical concentric flow paths enabling the lines of force to be cut at right angles thereto.

3,680,706
SCREEN FILTER UNIT
Herbert J. Baer, Ludwigsburg; Kurt R. Hense, Speyer-Nord, and Richard Hoferer, Bissingen/Enz, all of Germany, assignors to Filterwerk Mann & Hummel GmbH
Filed Jan. 19, 1970, Ser. No. 4,009
Claims priority, application Germany, Feb. 6, 1969, P 19 05 844.7
Int. Cl. B01d 25/22
U.S. Cl. 210—238 9 Claims



A screen filter unit with a plurality of interchangeable tubular screen elements clustered around a center, the liquid flowing inwardly and upwardly through the screen, the filtrate discharging axially from the elements through a single manifold flange. The screen elements have a segment-shaped form obtained by bending flat screen mesh so as to form a peripheral longitudinal flange but, the filter screen being supported on the inside by a support screen. Each element has a closed bottom end with a guide pin attached, and an open top end adapter with another guide pin parallel and offset to each other. When mounted, the elements are held under a controlled clamping pressure between the bottom flange of the unit and the manifold flange the flanges being held together by a central rod nut and handle attached thereto. The clamping pressure is determined by springs arranged between the screen elements and the bottom flange.

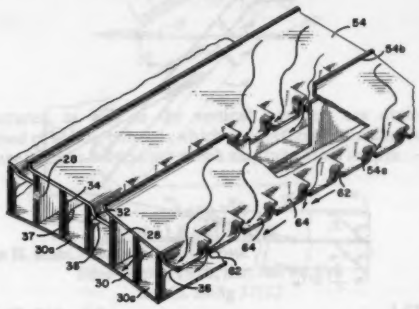
3,680,707
FILTER DRIER
Elwood R. Zeek, Crittenden, Va., assignor to Virginia Chemical Inc., Portsmouth, Va.
Filed July 30, 1971, Ser. No. 167,721
Int. Cl. B01d 27/02
U.S. Cl. 210—266 8 Claims



A filter drier used for refrigerants, particularly a filter drier housing embodying a medial desiccant storage chamber with fiberglass pads at either side of the desiccant storage chamber and adjacent the entrance and exit ports. The fiberglass pad adjacent the entrance port includes a means for forcing the filter pad against the desiccant without compressing the pad and thereby increasing its filtering ability.

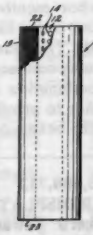
ERRATUM
For Class 210—402 see:
Patent No. 3,681,239

3,680,708
ROTARY DRUM FILTER
Oscar Luthi, Nashua, N.H., assignor to Improved Machinery Inc., Nashua, N.H.
Filed Sept. 10, 1970, Ser. No. 71,073
Int. Cl. B01d 33/06
U.S. Cl. 210—404 16 Claims



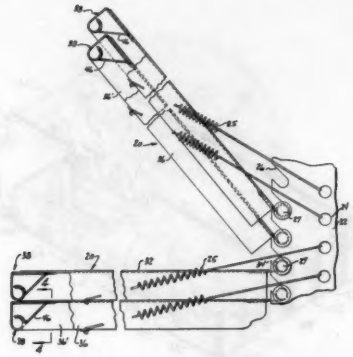
A rotary drum filter comprising a generally annular rotatably driven drum having filtrate compartments which extend generally longitudinally along the drum outer circumference. The filtrate compartments are overlaid by cover elements which have filtrate passages on their outer peripheries inwardly of a foraminous filter medium; and the filtrate passages are communicated with the filtrate compartments by drainage openings in an edge portion of each cover element at intervals along the length of the drum. The drainage openings are constructed to discharge filtrate to their respective communicating filtrate compartments in a direction at least generally towards the discharge ends of the latter whereby the discharging filtrate has a substantial velocity component in such direction.

3,680,709
CARTRIDGE TYPE FILTER AND METHOD OF MAKING SAME
Charles L. Snow, 2057 Reading Rd., Cincinnati, Ohio
Filed Nov. 18, 1970, Ser. No. 90,662
Int. Cl. B01d 27/04
U.S. Cl. 210—494 2 Claims



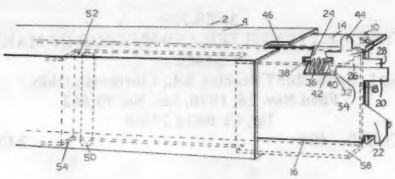
A cartridge type filter having a rigid tubular perforated core and a porous web of spunbonded fibrous resin wound thereon. The density of the wound web is controlled by control of tension on the web during winding. End portions of the winding are fused to be impervious.

3,680,710
TIRE TRAY CONSTRUCTION
Clarence H. Hager, Rockford, Ill., assignor to Modern Caster Co., Inc., Rockford, Ill.
Filed Dec. 21, 1970, Ser. No. 100,102
Int. Cl. A47f 5/00, 7/04
U.S. Cl. 211—24 7 Claims



A mobile truck has a plurality of tire trays pivotally mounted thereon for movement between a generally horizontal position and a raised position. Each tray has a flared skirt at each side, a rolled edge at the rear to provide a hinge connection, and a formed flange member at the front. The flange member has a rolled edge at the bottom, and a diagonal bracket is shaped to engage the rolled edge.

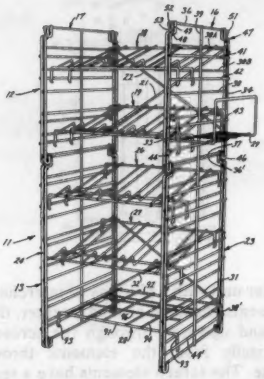
3,680,711
DECKING AND SHORING BEAM
Henry J. Brucker, Mountainside, N.J., assignor to Suburban Metal Industries Limited
Filed April 28, 1970, Ser. No. 32,565
Claims priority, application Canada, April 30, 1969, 51,186
Int. Cl. A47h 1/08
U.S. Cl. 211—105.3 5 Claims



A decking and shoring beam for use in load carrying containers provided with anchor members, such as apertured tracks, punched support posts or the like, mounted to opposite inside walls of the containers. The beam is of adjustable length and is adapted to be releasably connected at either end to said tracks or side posts. A combination of such beams may be positioned within a container to provide a support for a load over the upper surfaces of the beams.

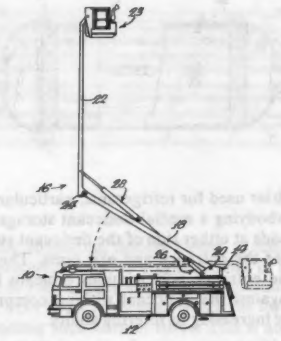
3,680,712
MODULAR DISPLAY RACK
Stanley J. Jurasek, Concord Township, Jackson County, Mich., assignor to Eagle Picher Industries, Inc., Cincinnati, Ohio
Filed Sept. 21, 1970, Ser. No. 74,025
Int. Cl. A47f 5/14
U.S. Cl. 211—181 14 Claims

An improved modular display rack or stand constructed of wire rod and including a plurality of disconnectable rack sections for permitting the size and capacity of the rack assembly to be selectively varied. The rack sections include a pair of side frames which support a plurality of removable shelves. Each shelf includes downwardly extending legs positioned between a pair of vertically and laterally spaced rods provided on the side frames, which legs have bent portions which resiliently snap under the lowermost rod for releasably but securely positioning the shelf on the side frames. Suitable removable cross-braces extend diagonally between and interconnect the pair of side frames adjacent the rear of each rack



section. The shelves, the side frames and the cross-braces of each rack section are all interconnected solely by means of resilient snap-like connections. The side frames have a pair of adjacent downwardly extending loops on the lower corners thereof, and the upper corners of the side frames have an extending ear or projection, whereby a plurality of rack sections can be selectively stacked one upon another by positioning the extending projections of a lower rack section into the recesses defined by the downwardly extending loops on the adjacent upper rack section.

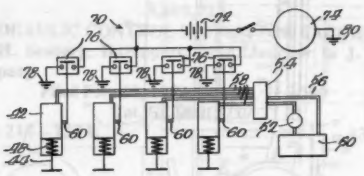
3,680,713
FLUID POWER DEVICE
Robert E. Langley, St. Joseph, Mo., assignor to Snorkel Fire Equipment Company
Filed Nov. 9, 1970, Ser. No. 87,998
Int. Cl. B66c 23/00, 23/54
U.S. Cl. 212—35 HC 21 Claims



A fluid power device including wall means defining a cylindrical chamber therewithin and including piston rod means

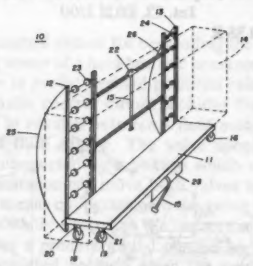
therein having primary and secondary pistons associated therewith, so that upon application of fluid under pressure to one side of both pistons, the piston rod means is moved outwardly during at least a portion of its stroke with a predetermined force greater than the force produced by the application of fluid under pressure to the primary piston alone.

3,680,714
SAFETY DEVICE FOR MOBILE CRANES
Terry M. Holmes, Schofield, Wis., assignor to J. I. Case Company
Filed July 22, 1970, Ser. No. 57,162
Int. Cl. B66c *23/62*
U.S. Cl. 212—145 **3 Claims**



A safety device for indicating a tipping condition for a mobile crane having a base supported by outriggers and a boom support for vertical and horizontal swinging movement on the base. The safety device includes a plurality of pressure responsive switches respectively cooperating with the head ends of fluid cylinders forming part of the outriggers and sensing the pressure of the fluid in the cylinders. The pressure responsive means are actuated when the pressure of the cylinder drops below a predetermined level to close a switch in an electrical circuit having a warning device incorporated therein to warn the operator of a tipping condition.

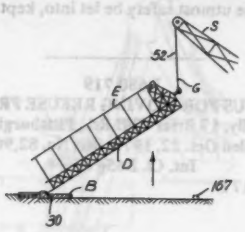
3,680,715
BUILDING MATERIALS TRANSPORTING AND HANDLING APPARATUS
Thurman R. Montgomery, 2017 Hurstview Dr., Hurst, Tex.
Filed Dec. 28, 1970, Ser. No. 101,883
Int. Cl. B65g *7/00*
U.S. Cl. 214—1 QE **10 Claims**



Building materials are stacked and secured on an "L" shaped frame. Wheels on the bottom of the frame allow the material to easily be transported through narrow passageways. Curved members on the side of the frame allow the material to be placed in a horizontal position and unloaded.

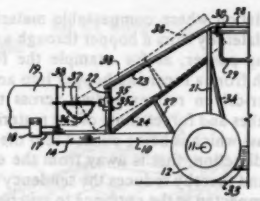
3,680,716
GANTRY CONSTRUCTION
Myron Jenner, Bethel, Vt.
Filed Nov. 24, 1969, Ser. No. 879,254
Int. Cl. E04g *21/00*
U.S. Cl. 214—1 H **9 Claims**

The present disclosure relates to an erecting system for prefabricated multi-story frame buildings, particularly of six story character, where the vertical columns and the floor structures have been properly located in position. The floor



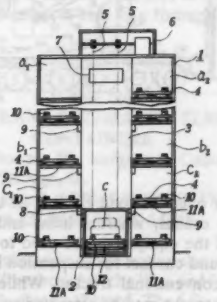
structures, as well as the vertical members are desirably formed of hollow columns which are preferably rectangular or square in cross-section but which may take other shapes.

3,680,717
BALE STOOKER
John H. Russ, Stockton, Kans.
Filed Dec. 2, 1970, Ser. No. 94,378
Int. Cl. B65g *57/32*
U.S. Cl. 214—6 B **1 Claim**



A stooker frame which is pivotally coupled to a hay baler and has flexible rail members interconnecting the frame and baler which serve as bale guides. The frame is supported by non-swiveling, ground engaging wheels.

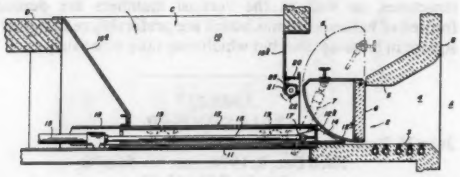
3,680,718
MULTI-STORIED GARAGE
Hideziro Miyachi, Nagoya, Japan, assignor to Miyachi Iron Works Ltd., Nagoya, Japan
Filed Aug. 20, 1970, Ser. No. 65,450
Claims priority, application Japan, Sept. 8, 1969, 44/71091
Int. Cl. E04h *6/06*
U.S. Cl. 214—16.1 CE **6 Claims**



A multi-storied garage characterized in that a single lift cage is capable of serving a plurality of motor vehicle storage cham-

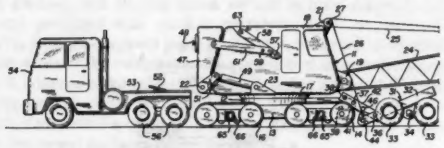
bers located at a plurality of floor levels, and that appropriate means are provided for holding in position the motor vehicles to be stored in the storage chambers, whereby the motor vehicles can with the utmost safety be let into, kept in, and got out of, the garage.

3,680,719
APPARATUS FOR MOVING REFUSE FROM A BIN
Bertram B. Reilly, 17 Briar Cliff Rd., Pittsburgh, Pa.
Filed Oct. 22, 1970, Ser. No. 82,908
Int. Cl. B65g *65/44*
U.S. Cl. 214—17 D **6 Claims**



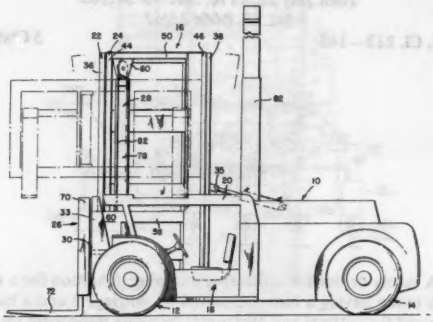
In an installation where compactable material is intermittently pushed laterally from a hopper through a passageway by a reciprocating pusher, as for example the feeding of municipal rubbish from a receiving hopper into an incinerator, a toothed power-driven roll extending across the top of the passageway rakes and forces some of the material in the upper part of the mass which is being pushed into the passageway in the opposite direction, that is away from the entrance to the passageway, and thereby reduces the tendency of the material to become compacted at the entrance to said passage.

3,680,720
TRACK LAYING EQUIPMENT AND CARRIER THEREFOR
Lyle H. Strange, 522 S. Yates St., Denver, Colo.
Filed Jan. 14, 1970, Ser. No. 2,762
Int. Cl. B60f *5/00*
U.S. Cl. 214—38 R **5 Claims**



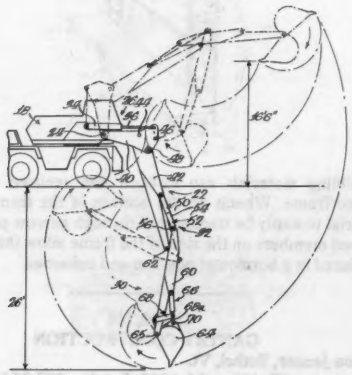
A system for over-the-road hauling of track laying equipment, such as cranes, wherein hoist and/or counterweight components of the equipment are used to elevate the tracks away from ground contact for suspension between a wheeled trailer and a conventional tractor. While the equipment is suspended, the tracks may be retracted to minimize the over-the-road width, or tracks of increased ground contacting area may be laterally extended for improved stability and/or maneuverability at times of use.

3,680,721
LIFT TRUCK WITH HORIZONTALLY SLEWABLE LOAD CARRIER
Maurice J. McIntyre, Langley, British Columbia, Canada, and John R. Newton, Salem, Oreg., assignors to Skagit Corporation, Sedro Woolley, Wash.
Continuation of Ser. No. 740,707, June 27, 1968, abandoned. This application Nov. 19, 1970, Ser. No. 91,163
Int. Cl. B66f *9/14*
U.S. Cl. 214—75 R **6 Claims**



A lift truck is provided with a lift mast having a horizontal slewable load carrier. In one aspect of the lift truck the body thereof is provided with an operator's cab having a load bearing roof onto which the load carrier can lower its load after being horizontally slewed to a laterally facing position. In another aspect of the lift truck, the fixed and movable upright guides of the lift mast are aligned longitudinally of the lift truck with the load carrier being mounted to the movable guide for vertical movement and for horizontal slewing.

3,680,722
MOBILE EXCAVATOR WITH ADJUSTABLE BOOM
William D. Symmank, Schofield, Wis., assignor to J. I. Case Company
Filed July 22, 1970, Ser. No. 57,035
Int. Cl. E02f *3/00*
U.S. Cl. 214—138 R **3 Claims**



A mobile excavator having a self-powered frame structure supporting a platform for rotation about a vertical axis with a

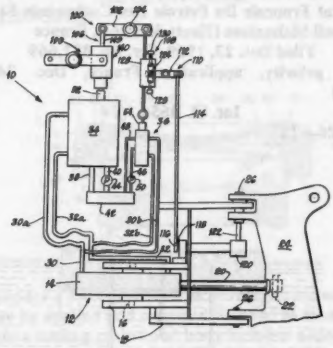
boom pivoted adjacent one edge on the platform and a material handling device pivoted on the free end of the boom. The boom and material handling device are respectively pivoted by fluid motor means and the boom is formed in two sections. The adjacent ends of the two sections are pivotally interconnected and releasable fastening means are used for maintaining the boom sections in any one of a plurality of pivoted, angularly related adjusted positions to thereby vary the range of operation of the material handling device. The material handling device is pivoted on the boom with two fluid motors so that the entire machine is very compact and still is capable of digging over a wide range.

3,680,723

HYDRAULIC CONTROL SYSTEM FOR BACKHOES

David H. Seaberg, Davenport, Iowa, assignor to J. I. Case Company

Filed Feb. 18, 1971, Ser. No. 116,309
Int. Cl. E02f 3/30
U.S. Cl. 214—138 R **13 Claims**



A hydraulic control system for controlling the pivotal movement of a swing tower of a backhoe and accurately positioning the swing tower in predetermined positions relative to a support. The hydraulic control circuit includes first and second valves disposed in parallel between a fluid motor, a reservoir and pressurized fluid source. The valve spools of the two valves are interconnected by a linkage which can be moved manually to simultaneously move both valves to an actuated position. Signal means cooperate with the swing tower and the linkage to sequentially neutralize the respective valves as the tower approaches a predetermined portion so that only one valve is in an actuated position when the swing tower is in close proximity to the predetermined position and can accurately position the tower.

3,680,724

HYDRAULIC CLAMP FOR LATERALLY MOVABLE MOUNTED DREDGES

Hans Schaeff, 7183 Langenburg (Wurttemberg), Germany

Filed April 24, 1969, Ser. No. 818,964
Claims priority, application Germany, April 26, 1968, P 17 59 400.2
Int. Cl. E02f 3/00
U.S. Cl. 214—138 **4 Claims**

A dredging device having a mounting plate for positioning the device on a vehicle and a slidable carriage movable on the

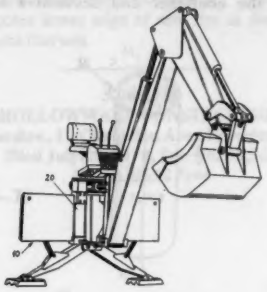


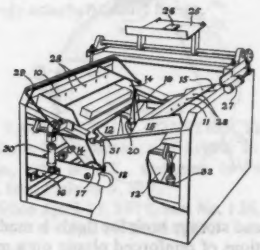
plate. Means are included for sliding the carriage along the plate and locking it in a given location.

3,680,725

BAG SLITTING MACHINES

Barrie Armstrong Poulton, Stockport, England, assignor to Simon Handling Engineers Limited

Filed March 20, 1970, Ser. No. 21,390
Claims priority, application Great Britain, April 2, 1969, 17,261/69
Int. Cl. B65g 65/00
U.S. Cl. 214—305 **8 Claims**



A bag slitting machine comprising spaced support means adapted to engage opposite ends of a bag to support same over a discharge opening located between said spaced support means, slitting blade means arranged to traverse said discharge opening and adapted to slit the underside of a bag when so supported, and means for alternately raising and moving towards one another and lowering and moving away from one another said support means a number of times to promote the flow of the contents of said bag through said discharge opening.

3,680,726

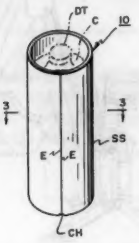
PROTECTIVE AND DECORATIVE SLEEVE FOR CONTAINERS

John V. Massey, Glencoe, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Aug. 3, 1970, Ser. No. 60,377
Int. Cl. B65d 23/08, 65/04
U.S. Cl. 215—12 R **1 Claim**

A container is enclosed in a decorative sleeve. The latter is preferably made of fiberboard or the like, and is in the form of a cylinder slit longitudinally thereof. The I.D. of the sleeve is slightly smaller than the O.D. of the container, and the elasticity of the split sleeve causes the same to embrace the cylindrical sides of the container snugly. In cases where the

container has a top closure smaller than the O.D. of the container, the decorative sleeve can extend above such top closure enabling the container and decorative sleeve to be



stacked readily. The decorative sleeve lends itself readily to changes in graphics thereon, all to the end that it may be changed in accordance with market needs.

3,680,727

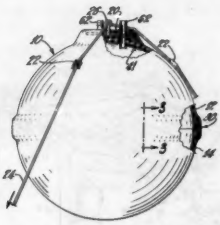
UNDERGROUND STORAGE TANK FOR LIQUIDS

Lee E. Pearson, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation

Filed Oct. 15, 1969, Ser. No. 866,558

Int. Cl. B65d *7/02, 7/12*

U.S. Cl. 220—3 **12 Claims**



An underground storage tank for fluids is made by forming hollow wall sections of reinforced plastic on a mold having a surface of double curvature, abutting the wall sections at their congruent open ends, and providing an endless reinforced plastic joint on the line of abuttment. The combination of a double curvature surface and multidirectional strength provided by randomly dispersed chopped glass strands in the resin matrix, provides resistance to the crushing forces of the surrounding earth. A planar surface is either formed on or molded into the tank wall for attaching an assembly of fittings thereto.

3,680,728

CONTAINER

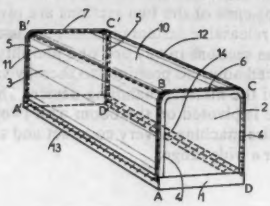
Remy Dousset, Lyon, France, assignor to Societe Nouvelle Des Atellers De Venissieux, Venissieux, France

Filed June 1, 1971, Ser. No. 148,443

Int. Cl. B65d *7/00*

U.S. Cl. 220—4 R **3 Claims**

A container has a rectangular base and two opposite end faces each formed by a rigid frame surrounding a solid wall. Longitudinal members parallel to the longitudinal axis of the base plate connect the upper corners of the end frames. A flexible sheet metal membrane is welded around its entire periphery to the longitudinal edges of the base plate and to the edges of the end frame distinct from the base plate. The membrane passes over the longitudinal members and bears on them without being fixed to them. The external outline of the longitudinal members is shaped in the form of two clothoid portions symmetrical relative to the bisector of the angle



formed by the faces defined by the longitudinal members, so that the membrane can slide over them easily without undergoing a sharp bend.

3,680,729

DEVICE FOR SEPARATING TWO LIQUIDS OF DIFFERENT DENSITIES IN A TANK CONTAINING THESE TWO LIQUIDS

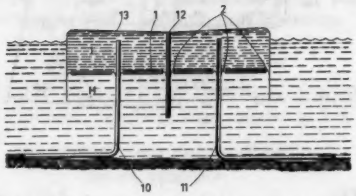
Gerard Bonavent, Rueil Malmaison; Michel Huvey, Bougival, and Marcel Peinado, Maison-Lafitte, all of France, assignors to Institut Francais Du Petrole Des Carburants Et Lubrifiants, Rueil Malmaison (Hauts de Seine), France

Filed Dec. 23, 1969, Ser. No. 887,669

Claims priority, application France, Dec. 24, 1968, 68180573

Int. Cl. B65d *1/24*

U.S. Cl. 220—22 **6 Claims**



A device for separating two liquids of different densities in a tank containing these two liquids one above the other which includes a separating element floating with clearance along the vertical wall of the tank between the two liquids, and a flexible sealing skirt of reduced thickness adapted to tangentially contact the vertical wall of the tank and to turn upwardly or downwardly along the tank wall without mixing of the two liquids when the tank is switched from a filling to an emptying operation or vice versa. The separating element may be provided with openings for passages of pipes, the edges of which are also provided with flexible sealing skirts, for filling or emptying the tank. Also, the separating element may include grooves for draining decanting products from the upper liquid toward the lower liquid.

3,680,730

CAN SEALING APPARATUS

Samuel Schlanger, 44 Forest Rd., Valley Stream, N.Y.

Filed Nov. 20, 1970, Ser. No. 91,275

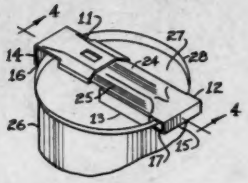
Int. Cl. B65d *53/00*

U.S. Cl. 220—46 R **8 Claims**

A reusable closure device for temporarily sealing an irregularly shaped opening in the top of a can, characterized by a peripheral bead. The outer ends of a pair of slidably interfitted

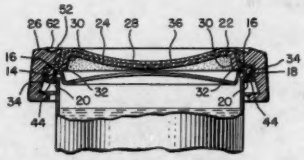
members grasp the bead and force a deformable elastomeric pad against the opening to seal in the contents of the can.

The aforementioned abstract is neither intended to define



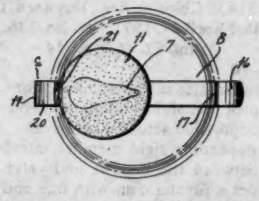
the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,680,731
CONTAINER CLOSURE
William Lelyk, Medinah, and Frank E. Stepanek, La Grange Park, both of Ill., assignors to American Home Products Corporation, New York, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,663
Int. Cl. B65d 45/32
U.S. Cl. 220—55 AN **9 Claims**



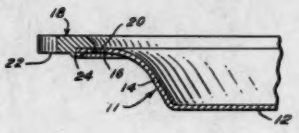
A closure for a container such as beverage cans and the like which may be applied and removed by hand as many times as desired has a sealing gasket and body member slidably nested in an outer retaining ring, which ring has means to cooperate with the body member and the sealing gasket to effect an hermetic seal and to prevent the closure from being blown from the container by gaseous pressure exerted by its contents.

3,680,732
CAN CLOSURE
George Dickie, 7536 Cornell, University City, Mo.
Filed June 29, 1970, Ser. No. 50,517
Int. Cl. A47J 27/08, 36/10
U.S. Cl. 220—57 **4 Claims**



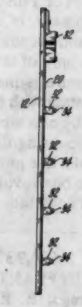
For use with a convention cylindrical can having a top wall engaged to the side wall by the customary endwise projecting rim, a closure for a dispensing opening formed in said top wall and comprising a resilient pad for sealing disposition across said opening, and a relative rigid, yet resilient body secured to said pad and extending across said can top wall and incorporating means at its opposite ends for forceful abutment against the outer lower edge of said rim at diametrically opposite locations thereon.

3,680,733
HOLLOWWARE CONSTRUCTION
Samuel J. Winslow, 19 Clarendon Ave., Providence, R.I.
Filed July 20, 1970, Ser. No. 56,365
Int. Cl. B65d 7/44
U.S. Cl. 220—73 **2 Claims**



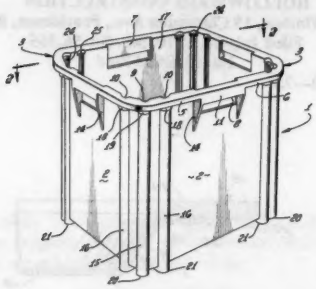
An article of hollowware and a method of making same wherein the hollowware has a peripheral flange and a peripheral ornamental mount is cast onto said flange, said ornamental mount being located on the top surface of said flange and extending outwardly of the peripheral edge thereof, the bottom surface of said ornamental mount being substantially flush with the bottom surface of said flange and having integral means for receiving the edge of the flange in imbedded relation therein in order to maintain said ornamental mount securely attached to said flange.

3,680,734
VACUUM TANK CONSTRUCTION
Charles D. Rush, Stony Brook, and Arthur B. Hube, Huntington Station, both of N.Y., assignors to Potter Instrument Company, Inc., Plainview, N.Y.
Filed April 19, 1971, Ser. No. 135,172
Int. Cl. B65h 17/32
U.S. Cl. 220—83 **2 Claims**



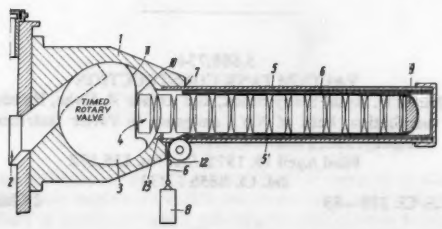
An improved vacuum column construction for a computer tape drive has a thin, flat, sheet held in a plane by side rails secured to the sheet on one side bracing members on the other side arranged at an angle to the rails and fastened to the rails through the sheet.

3,680,735
LUG FOR LIQUID CONTAINER
Robert S. Lucas, Harbor City, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
Filed March 31, 1971, Ser. No. 129,885
Int. Cl. B65d 21/52
U.S. Cl. 220—97 R 9 Claims



An improved container-carrying lug in which corner ribs are provided concave to the lug interior and vertically extending tongues project into the rib concavity in a manner to engage and support a stacked corresponding lug.

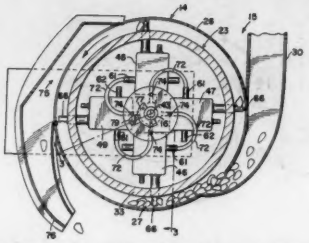
3,680,736
ROTARY VALVE DISPENSER FOR TABLETS
Hans Viessmann, Battenberg/Eder im Hain, Germany
Filed Aug. 5, 1970, Ser. No. 61,358
Int. Cl. B65h 1/08
U.S. Cl. 221—14 5 Claims



An apparatus for automatically dispensing disinfecting or germicidal tablets into a swimming pool or other body of water where the application of a disinfectant is required is disclosed. The apparatus consists of a casing having a rotary valve positioned therein and means to rotate the rotary valve on a timed program. A supply of tablets is provided adjacent the rotary valve and pressure is maintained on the tablet to maintain the tablets in contact with the valve. The valve is provided with a recess whereby one tablet is transported from the column of tablets to a dispensing duct in the casing with one tablet being dispensed into the pool during each rotation of the valve. Means may also be provided for indicating when the supply of tablets has been depleted.

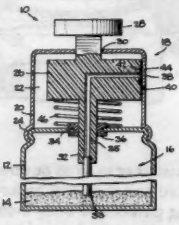
3,680,737
FLUIDIC GRAIN PLANTING CONTROL
Joseph L. Zagotta, Chicago; R. Eugene Wallace, Elmhurst, both of Ill., and Donald A. McCallum, Burlington, Ontario, Canada, assignors to International Harvester Company, Chicago, Ill.
Filed June 3, 1971, Ser. No. 149,490
Int. Cl. B65g 59/04
U.S. Cl. 221—211 10 Claims

A pneumatic planter type having a seed supply, wherein air under pressure is supplied to a rotary feed wheel having radial pickup fingers, an air control device is provided for each of the fingers having means for utilizing the air pressure to generate a vacuum to attract seed to the finger as it passes



through the seed supply and alternately converting the air stream to positive pressure after a predetermined rotation of the feed wheel to successively discharge the seed from the fingers.

3,680,738
PRESSURIZED PACKAGE
Kenneth Dean Vos, Racine, and Harry Gloyd, South Milwaukee, both of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Jan. 12, 1970, Ser. No. 2,018
Int. Cl. B65d 83/14
U.S. Cl. 222—54 27 Claims

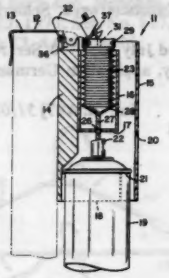


This invention relates to a pressurized package of the class including a container for receiving a product, propellant means also in the container for discharging the product from the container, and a dispensing assembly mounted on the container and characterized by positioning the shutoff which holds the pressure of the container at the dispensing exit, combined with other novel features.

3,680,739
DOOR ACTUATED DISPENSER HAVING BELLOWS AS TIMING MEANS
Paul F. Karr, 31835 Chicoine Ave., Hayward, Calif.
Filed April 21, 1971, Ser. No. 136,144
Int. Cl. B65d 83/14
U.S. Cl. 222—70 6 Claims

Dispensing apparatus including means for supporting a bellows and aerosol container containing deodorant or the like and having a depression actuated spray valve, at the inside of a door with a depending rigid member interposed in bearing relationship between the bellows and valve. The apparatus further includes a pivotal cam with one end bearing against the distal end of the bellows with respect to the rigid member, and a second end positioned for engagement with the door jamb upon closing of the door. When the door is closed, the cam is actuated against the bellows to urge the bellows and associated rigid member against the valve, thereby depressing

same and effecting dispensing of the contents of the aerosol can. Thereafter, air escapes from the bellows through a small



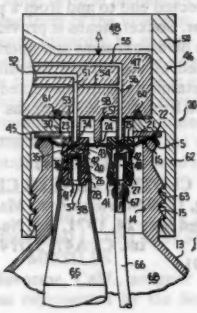
vent opening to permit collapse of the bellows and return of the valve to its unactuated position, thereby insuring a single discharge of spray from the valve.

3,680,740

DISPENSING CONTAINER WITH PLURAL CLOSURES

James W. Kinnavy, Westmont, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Jan. 6, 1970, Ser. No. 1,001
Int. Cl. B65d *83/00*
U.S. Cl. 222—129 **12 Claims**



This disclosure relates to a novel dispensing container in which a pair of valves are carried by a first closure seated upon a container neck, the valves being in fluid communication with a propellant chamber and a product chamber, a second closure threaded or otherwise secured to the container neck maintaining the first closure in seated relationship thereupon, and actuator means carried by the second closure for opening the associated valves during a dispensing operation. The first closure includes a normally open aperture for venting the product chamber to atmosphere, while the actuator includes means for closing the aperture during a dispensing operation.

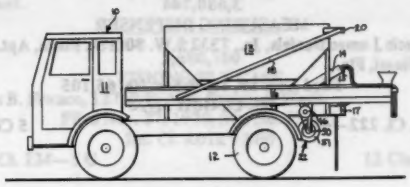
3,680,741

FERTILIZER DISTRIBUTOR

James R. Barber, 1404 N. Regal, Spokane, Wash.

Filed Dec. 16, 1970, Ser. No. 98,743
Int. Cl. A01c *15/00*
U.S. Cl. 222—177 **3 Claims**

A fertilizer distributor comprising a truck-mounted storage hopper and cantilevered distributing hoppers carried on the truck at the rear end and movable between storage positions alongside the truck and operational positions projecting laterally outward from the truck. An improved drive mechanism is disclosed for powering the metering shaft mechanism in the distributing hoppers. A selectively powered central drive unit is mounted at the rear of the truck, taking power by engagement with one truck wheel. Meshing chain flights at the inner ends of the distributing hoppers automatically engage the drive unit while the distributing hoppers are



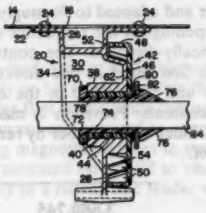
in their respective operational positions. One or both distributing hoppers may be selectively powered from the common drive unit to assure an even rate of application of fertilizer across one half or the entire width of the apparatus.

3,680,742

SEED DISPENSING APPARATUS

Roger Lee Patterson, and Bryan William Brodie, both of Fonthill, Ontario, Canada, assignors to Deere & Company, Moline, Ill.

Filed Nov. 4, 1970, Ser. No. 86,815
Int. Cl. A01c *7/12*
U.S. Cl. 222—177 **11 Claims**



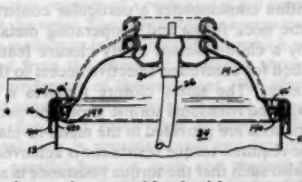
A seed cup and feed wheel unit for dispensing seed from a hopper, the feed wheel being of the single, internal run type and including a hub portion journaled in the cup. A releasable retainer member extends through the hub portion and acts between the wheel and cup to retain the former on the latter. A drive shaft for the wheel which extends through and is drivingly connected to the hub normally prevents release of the retainer member, the member being releasable to permit removal of the wheel from the cup only upon removal of the shaft.

3,680,743

SAFETY VENTING APPARATUS COMBINED WITH AN AEROSOL CONTAINER

Richard E. Reinnagel, Elma, N.Y., assignor to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.

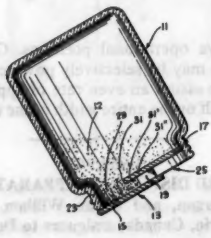
Filed April 10, 1970, Ser. No. 27,306
Int. Cl. B65d *83/14*
U.S. Cl. 222—397 **2 Claims**



An aerosol container combined with apparatus to relieve excessive interior pressures in the form of a fluted stab located

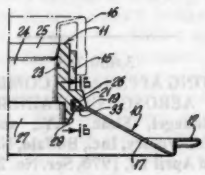
adjacent a pressure deformable portion of the container such that upon deformation thereof the stab will make contact and pierce an opening therethrough.

3,680,744
MEASURING DISPENSER
Francis James Daniels, Jr., 7332 S.W. 80th St. Plaza, Apt. 184, Miami, Fla.
Filed Aug. 19, 1970, Ser. No. 65,105
Int. Cl. G01f *11/28*
U.S. Cl. 222—437 **5 Claims**



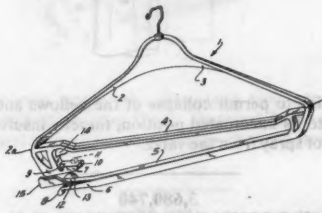
A measuring device adapted to be placed in the opening of a container in which there are provided spaced wall members joined together and adapted to fit snugly within the container opening, the openings of the respective spaced wall members being diametrically-disposed. The container having divided dry material is first tilted in one direction from an upside-down position and then tilted in the opposite direction to dispense the contents. Provision is made for enlarging the opening of the inner wall member by removing portions from scorings thereof.

3,680,745
CONTAINER CONSTRUCTION FOR A SAFETY CLOSURE
William James Landen, Cheshire, Conn., assignor to Eyelet Specialty Company, Wallingford, Conn.
Filed Sept. 7, 1971, Ser. No. 178,306
Int. Cl. B65d *25/40*
U.S. Cl. 222—570 **16 Claims**



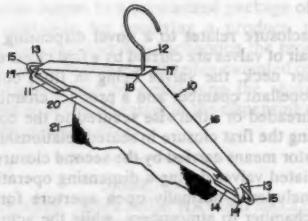
The invention contemplates a particular construction of a tubular plastic neck fitting and cooperating metal container part whereby a child-resistant safety closure feature can be directly applied for controlled selective access to the contents to the container. The safety closure requires a certain resistance to applied rotational torque about the neck axis, and locking formations are provided in the metal-to-plastic interfit such that the required torque resistance is achieved. The construction is also such that the torque resistance is achieved regardless of the angular orientation of the parts upon axial assembly thereof.

3,680,746
GARMENT HANGER
Herbert Seckelmann, Wahlen/Odw., Germany, assignor to Hessischens Kunststoffwerk Schlerf, Wahlen/Odw., Germany
Filed July 30, 1970, Ser. No. 59,492
Claims priority, application Germany, Aug. 2, 1969, G 69 30 685.0
Int. Cl. A47j *51/084*
U.S. Cl. 223—88 **13 Claims**



A pair of divergent arms each have a free end remote from the other. A first bar extends between and connects these ends and a second bar extends along the first bar and has a connected end connected to one of the free ends and another unconnected end. The second bar is downwardly swingable about the connected end to and from a position of parallelism with the first bar. Socket means is provided at the other of the free ends of the divergent arms and operative for receiving the unconnected end of the second bar and detaining means is provided for detaining the unconnected end against unintentional separation from the socket means.

3,680,747
CLOTHES HANGER CLAMP
Sverre Quisling, 1240 Sherman Ave., Madison, Wis.
Filed May 24, 1971, Ser. No. 146,365
Int. Cl. A47j *51/14*
U.S. Cl. 223—91 **5 Claims**

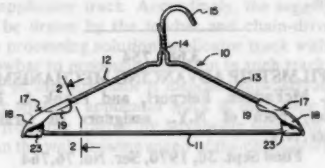


A clothes hanger consisting of a wire frame and an elongate strip of paperboard or plastic. The wire frame consists of a hook, a pair of sloping shoulder portions, a straight lower portion, and a pair of end portions connecting the lower portion to the shoulder portions. The strip has opposed ends each of which has an aperture for receiving the hook of the wire frame for maintaining the ends of the strip in overlapping relation thereon. The strip has elongate apertures receiving the shoulder portions, ends or lower portion of the frame thereby securing the strip to the frame. An elongate slit substantially midway between the ends of the strip receives the lower portion of the frame for maintaining a garment between the strip and the lower portion.

3,680,748
GARMENT SHOULDER SAVER ATTACHMENT FOR WIRE GARMENT HANGERS

Charles Brunhuber, 931 Park Ave., Hoboken, N.J.

Filed Feb. 23, 1971, Ser. No. 117,957
Int. Cl. A47j 51/086
U.S. Cl. 223—98 22 Claims

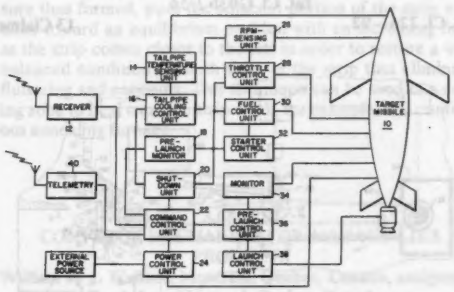


A shoulder support attachment for a wire garment hanger having an inclined shoulder rung and a horizontal rung joined by a rounded end which has upper and lower snap fastening portions adapted to be respectively engaged with the inclined shoulder wire rung of the wire garment hanger and with the rounded end and horizontal rung thereof. The snap fastener portions formed of the shoulder saver body either integrally by molding or secured thereto. The upper snap fastener portion is formed from a narrow upper portion having its sides folding upon one another and providing lips that can be sprung apart to accommodate in snap fashion the shoulder rung of the wire garment hanger. The lower snap fastening portion extends inwardly or downwardly from the inner face of the shoulder saver body and in the same vertical plane with the upper snap fastening portion. In one form of the invention the lower snap fastening portion extends inwardly to engage the horizontal rung of the garment hanger and the cutting turn of the form of the invention the lower snap fastening portion extends perpendicular to the inside face of the shoulder saver body adapted to accommodate the rounded end of the garment hanger. The lower fastening portions serve to restrain the shoulder saver attachments against rotation upon the inclined shoulder wire.

3,680,749
REMOTE-CONTROLLED LAUNCH SYSTEM FOR MISSILES

John S. Davis, Port Hueneme, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 23, 1969, Ser. No. 844,017
Int. Cl. F41g 7/00
U.S. Cl. 244—3.14 3 Claims

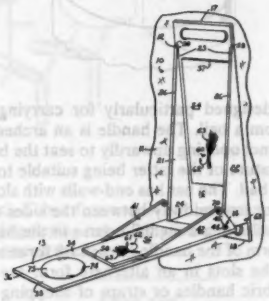


The apparatus of the present invention is employed at an unmanned location to launch a missile by commands received over an R. F. link. The invention apparatus processes these commands and applies them to conduct power to the missile, start its engine, arm the electronics, and ignite a JATO bottle which effects the launch. Each received command is interrelated with signals obtained by monitoring the instantaneous missile tail pipe temperature, engine RPM, generator voltage, and radio control system status. Means are provided for aborting a launch if all prescribed missile operating conditions are not met.

3,680,750
FISHING FLY CASE

Louis B. Franco, 12719 E. Alki, Spokane, Wash.

Filed Nov. 27, 1970, Ser. No. 93,131
Int. Cl. A01k 97/06
U.S. Cl. 224—5 G 12 Claims

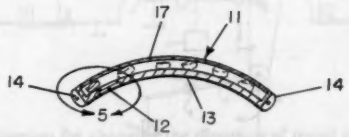


A fishing fly case is disclosed for attaching to the clothing of a fisherman, preferably on his chest to enable the fisherman to carry a supply of fishing flies within while fishing. The case has a lid that pivots downward and outward to open the case. The case has two opposing magnetic surfaces to support the flies. A magnifying lens is mounted on the lid to visually facilitate the attachment of a fly to a fishing line leader when the lid is open.

3,680,751
BRACELET FOR CARRYING MEDICINAL PILLS

Walter R. Ten Brook, deceased, late of 714 Ferry Street, Albany, N.Y. (Mildred Ten Brook, administratrix)

Filed July 31, 1970, Ser. No. 59,935
Int. Cl. A44c 5/00
U.S. Cl. 224—28 B 1 Claim



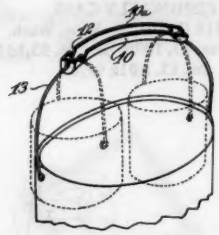
This invention consists of a rectangular pill container that is curved to fit the wrist. The pill container is especially designed for carrying medicines in the form of pills which are placed in and removed from the aforesaid container through a round opening the underside of the container. The aforesaid opening, which is provided with internal threads, is kept closed by means of a flat head screw that is screwed therein. The aforesaid container is provided with two integrally formed spaced and parallel lugs on each end thereof to which is suitably secured one end of a flexible wrist band that encompasses the wrist when the aforesaid invention is being worn.

3,680,752

CARRYING HANDLES

Glenn C. Wilson, 320 N. Euclid Ave., Oak Park, Ill.

Continuation-in-part of Ser. No. 802,828, Feb. 27, 1969, abandoned. This application May 28, 1970, Ser. No. 41,629
Int. Cl. B65d *63/18*
U.S. Cl. 224—56 3 Claims



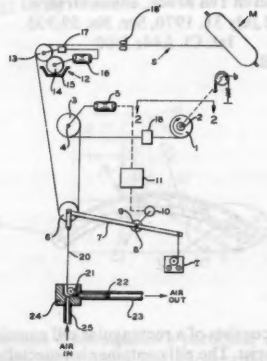
A handle designed particularly for carrying a paint can suspended from a bail. The handle is an arched channel bar with the channel opening upwardly to seat the bail in the bottom, the curvature of the latter being suitable to nest it in the hollow of the bail. The bar has end-walls with slots made from the top and located midway between the sides of the bar for guiding the bail along a medial course in the handle; and the slots in one form of the handle are square for seating paint can bails, while the slots in an alternate form are V-shaped to wedge the fabric handles or straps of shopping bags and the like. The bottom of the handle is thickened and rounded cross-wise on the under side to secure a comfortable hold in the palm of the hand. The handle is adapted to support single or multiple bail-incorporating cans or cord-wrapped bundles as indicated in FIG. 1.

3,680,753

CONSTANT TENSION STRAND FEEDING SYSTEM

David E. Shaw-Stewart, Torrance, Calif., assignor to Goldsworthy Engineering, Inc.

Filed Sept. 21, 1970, Ser. No. 73,828
Int. Cl. B65h *25/08*
U.S. Cl. 226—25 2 Claims



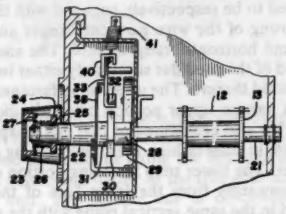
A system for feeding a roving strand to a demand point where the system employs a driven capstan roller for receiving the strand from a strand supply. The strand is also passed around a dancer roller which is mounted on a pivotal arm, and then over a resin applicator to the demand point. The pivotal arm is mounted at a pivot and operatively actuates a rotary transducer which, in turn, controls the speed of the motor operating the capstan. Accordingly, as the demand for the strand increases, the pivotal arm is biased upwardly which, in turn, causes the rotary transducer to increase the speed of the motor operating the capstan. Constant tension is maintained on the pivotal arm by means of a cord which is connected to the arm and to the piston of a pneumatic cylinder. Air biases the piston in one direction causing the arm to be urged downwardly. Thus, by changing the air pressure against the piston, it is possible to change the tension maintained on the pivotal arm.

3,680,754

FILMSTRIP ADVANCING MECHANISM

Robert N. McFadden, Fairport, and Frank L. Blaakman, Rochester, both of N.Y., assignors to Graflex, Inc., Rochester, N.Y.

Filed Sept. 30, 1970, Ser. No. 76,764
Int. Cl. G03b *1/42*
U.S. Cl. 226—76 4 Claims



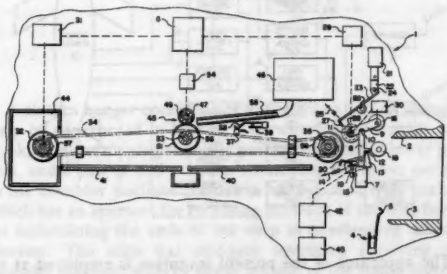
A filmstrip advancing mechanism has a sprocket turned on a shaft carrying a sleeve with a clutch between the sleeve and the shaft. A knob turns the shaft and is movable axially to disengage the clutch for turning the shaft relative to the sleeve. The sleeve is detertable to stop the shaft at successive frame positions of the filmstrip. The sleeve carries a ratchet having a number of teeth equal to the number of detent stops, and a pivotally reciprocal pawl is mounted on the projector to engage and advance the ratchet teeth for advancing the filmstrip. A solenoid depresses the pawl lever on a signal from a tape deck accompanying the projector, and a manual button is also arranged for actuating the pawl.

3,680,755

WEB PROCESSING APPARATUS

Sanford Wayne Foor, and John F. Egan, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 26, 1971, Ser. No. 147,002
Int. Cl. G03b *1/56*
U.S. Cl. 226—92 13 Claims



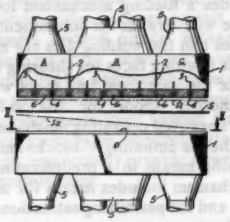
A web processor wherein a towbar and chain-drive assembly is adapted to engage a leading web end at a predeter-

mined location and draw a web so engaged along a feed path extending above and in the same direction as that of a processing solution applicator track. The leading web is positioned for engagement with the towbar by a first web drive of the processor which advances such end from a web supply source to the predetermined location. Since the first web drive advances an engaged web at a faster speed than the web drawing speed of the chain-drive, a web portion extending between the first web drive and the towbar will sag into the processing solution applicator track. Accordingly, the sagging web portion will be drawn by the towbar and chain-drive assembly along the processing solution applicator track without exposing the towbar to processing solution in such track. A second web drive of the processor is disposed downstream from the processing solution applicator track to disengage the leading web end from the towbar by advancing such end at a faster speed than the web drawing speed of the chain-drive.

3,680,756
MEANS FOR PREVENTING THE FLUTTERING AND CANOEING OF STRIP WORK

Masuhiko Hirai, Hiroshima, and Takeo Fukushima, Itsukaichi-machi, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 11, 1969, Ser. No. 884,162
Claims priority, application Japan, Dec. 14, 1968, 43/91818
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 **3 Claims**



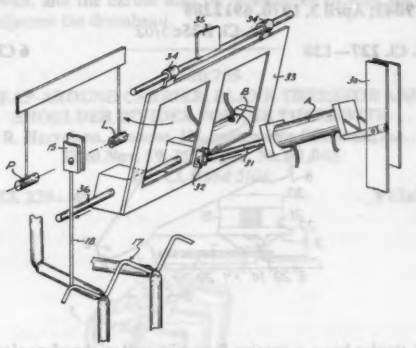
An illustrative embodiment of the invention prevents strip work from "fluttering" and "canoeing" by establishing spaces of static high pressure fluid on both sides of the strip. Preferably, jets of pressurized fluid form the periphery of each of the static high pressure spaces. The jets and the static pressure thus formed, push the adjacent portion of the strip work back toward an equilibrium position with an increasing force as the strip comes closer to the jets in order to restore a well-balanced condition on both sides of the strip that eliminates fluttering and canoeing. This technique can be used in a cooling zone to heat treat the strip work, for example, in a continuous annealing furnace.

3,680,757
CONVEYOR MECHANISM FOR SAUSAGE-LIKE PRODUCTS

William R. J. Wallace, Montreal, Quebec, Canada, assignor to Hygrade Foods Inc., Montreal, Quebec, Canada

Filed Sept. 23, 1970, Ser. No. 74,707
Int. Cl. B65h *33/00*
U.S. Cl. 226—105 **2 Claims**

The loading of continuous chains of sausage products into festooned loops on a T-bar conveyor for transportation through a cooker, as illustrated in U.S. Pat. No. 3,505,081 issued Apr. 7, 1970, is rendered less dependent on accurate alignment of the conveyor bars by the use of a tugger device

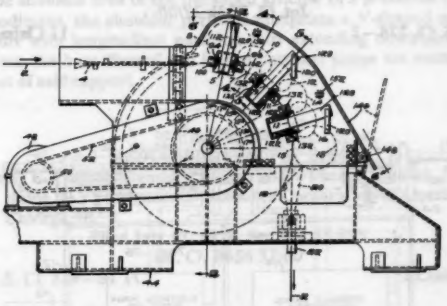


that pulls each T-bar forward of its normal position on the conveyor during paying out of lengths of the sausage chains to form loops between the T-bars.

3,680,758
SLANT DISC ENTRY GUIDE

Roger Kinnicutt, Jr., Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed March 3, 1971, Ser. No. 120,658
Int. Cl. B65h *17/22*
U.S. Cl. 226—183 **9 Claims**



A mechanism for changing the direction of travel of a continuous and rapidly moving bendable rod through a substantial angle in the order of 90°. The mechanism consists of a power driven grooved guide wheel and a plurality of rotating closely adjacent smaller guide wheels located along a segment of the periphery of the main guide wheel about which the rod is to be turned. Some of the smaller guide wheels are slanted alternately with respect to the main guide wheel. The slanted wheels overlap each other so that over a given angular segment of the main guide wheel, there may be more positions of engagement of the smaller guide wheels with the rod thereby to maintain full control of the rod as its line of travel is changed and to insure complete delivery of the rod for its entire length to a rod collecting device.

3,680,759

STAPLERS

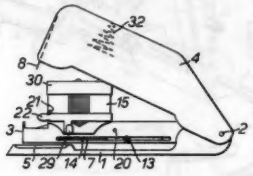
Stefan Eugene Tyszkiewicz, Villa Les Cypres, Chemin Ermitage, 06 Antibes, France

Filed June 10, 1970, Ser. No. 45,196

Claims priority, application France, June 10, 1969, 6919042; April 3, 1970, 6912289

Int. Cl. B25c *5/02*

U.S. Cl. 227—120 **6 Claims**



A stapler has a magazine for additional sticks of staples and a manually operable slider for allowing a stick of staples to be transferred from the magazine to the staple carrying arm. The slider has a lateral projection which projects normal to, and below, the stapler cover and enables the slider to be operated without moving the cover to the position in which the magazine is exposed fully. The magazine is mounted pivotally on the arm by means of reentrant bent portions enabling the magazine to be disengaged from the arm after pivotal movement from its operational position. An electromagnetic device for moving the slider and the staple pusher device together automatically may be provided.

3,680,760

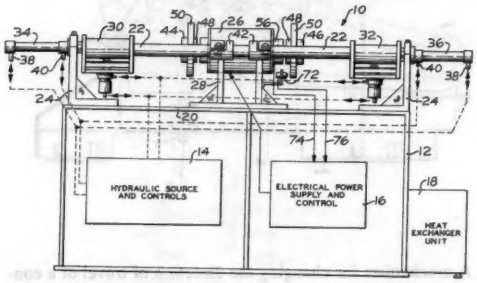
CONTROL SYSTEM FOR INERTIA WELDING MACHINES

Philip Joseph Costa, Chillicothe, Ill., and Caterpillar Tractor Co., Peoria, Ill.

Filed April 17, 1970, Ser. No. 29,486

Int. Cl. B23k *27/00*

U.S. Cl. 228—2 **11 Claims**



A control system for an inertial friction welding machine starts and accelerates an alternating current, induction drive motor to a preselected speed, senses the drive motor speed, automatically shuts-off power to the drive motor when the preselected speed is reached and signals a hydraulic control system to initiate and to terminate the welding sequence. The control system includes a DC link voltage control circuit, a frequency summing control circuit, a speed transducer, a control for setting the slip frequency, a wave-shaping and gate control unit and a silicon controlled rectifier inverter.

3,680,761

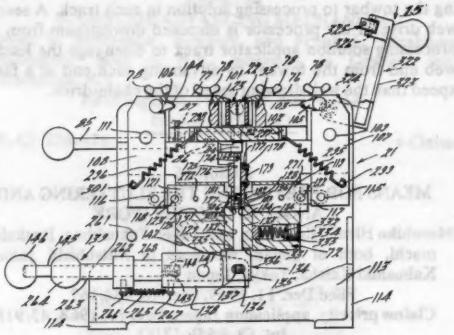
FINE WIRE BUTT WELDER

Walter J. Rozmus, Hubbardsville, and Matt T. Rozmus, Barneveld, both of N.Y., assignors to Kelsey-Hayes Company

Division of Ser. No. 766,813, Oct. 11, 1968, Pat. No. 3,606,131. This application July 28, 1970, Ser. No. 64,894

Int. Cl. B23k *21/00*

U.S. Cl. 228—3 **9 Claims**



A fine wire welding machine for cold butt welding small diameter wires through a multiple upset technique. The machine includes a loading mechanism for accurately positioning the fine wire strands for subsequent engagement with the welding dies and the welding dies are movable in a plane parallel to their abutting faces for shearing the wires and aligning the end of the wire from one spool with the end of the wire from another spool for the subsequent welding technique. An improved operating mechanism is incorporated for operating the die actuating V-blocks and for operating the dies and gripping means in a predetermined sequence. The operating mechanism includes means for adjusting the opening of the dies and for permitting retraction of the dies for the loading procedure.

3,680,762

AUTOMATIC SOLDERING APPARATUS

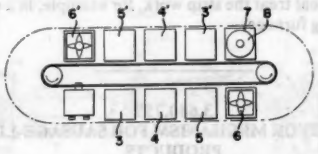
Kenshi Kondo, 6-3, Tamagawa-Seta-machi Setagaya-ku, Tokyo, Japan

Filed June 2, 1970, Ser. No. 42,843

Claims priority, application Japan, June 28, 1969, 44-60699

Int. Cl. B23k *1/08*

U.S. Cl. 228—37 **3 Claims**



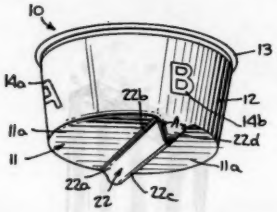
A flux foaming unit, a preheating unit, a solder bath unit, and a cooling unit are arranged around an endless chain moving in a horizontal plane. By mounting a printed circuit board on a carrier attached to the endless chain, the board can be transported by means of the carrier and soldered automatically during its passage over each said unit.

3,680,763

CONTAINER PARISON

Rodney E. Ludder, Glen Head, N.Y., assignor to Owens-Illinois, Inc.

Filed July 2, 1970, Ser. No. 51,802
Int. Cl. B65d 1/10
U.S. Cl. 229—1.5 B 6 Claims



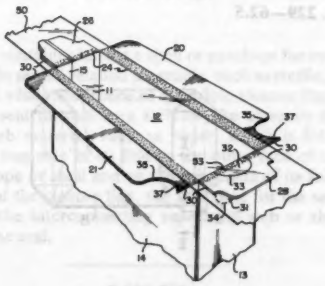
Thin-walled, nestable, generally cup-shaped preform or parison of thermoplastic material having a protuberance on its bottom wall portion which provides a transversely extending, generally lateral facing ridge surface for use in pivotally orienting the parisons as they are conveyed one-at-a-time at relatively high speed into a blow-molding machine for final forming to non-nestable container shape; parisons have localized printed or thickened surface areas, and such pivotal orienting causes these areas to face precisely, as desired, with respect to particular local surface areas of machine mold cavity in which they are received; screw type conveyor moves single line of upright parisons laterally toward machine, urging their respective bottom ridge surfaces against fixed aligning track which promotes desired pivotal movement of each parison and retains resulting alignment; vacuum applied through machine mandrel by which each parison is picked up and held promotes any necessary final, incremental orienting as parison bottom ridge seats itself against transversely extending, mating configuration on mandrel bottom; alternative parison embodiments respectively provide downwardly or upwardly projecting bottom ridge.

3,680,764

OPENING ARRANGEMENT FOR DRUMHEAD CARTONS

Chauncey Young, and William H. Watson, both of St. Louis, Mo., assignors to Riegel Paper Corporation, New York, N.Y.

Filed June 11, 1970, Ser. No. 45,506
Int. Cl. B65d 5/72, 5/56
U.S. Cl. 229—17 R 5 Claims



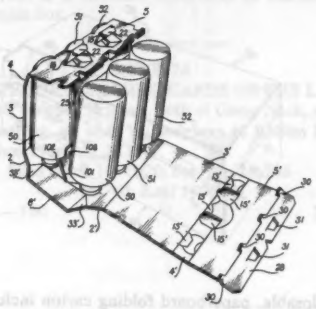
An improved opening arrangement for dispensing the contents of a hermetically sealed drumhead carton is disclosed herein. A removable opening panel is included in the upper portion of a side wall, and its removal is facilitated by an integral lift tab formed in a contiguous dust flap. The lift tab is arranged and pre-cut so that it may be readily grasped and removed along with the opening panel to provide a dispensing opening in the carton while leaving the drumhead completely intact. Where reclosing of the carton is necessary or desired, the opening panel may be appropriately hinged in the carton side wall, and the carton may be reclosed by tucking the lift tab adjacent the drumhead.

3,680,765

WRAP-AROUND CARRIER, BLANK THEREFOR AND SHOULDER DIVIDER FOR USE THEREWITH

Glen R. Harrelson, Monroe, La., assignor to Olinkraft, Inc.

Filed Nov. 19, 1970, Ser. No. 91,045
Int. Cl. B65d 5/04
U.S. Cl. 229—40 9 Claims



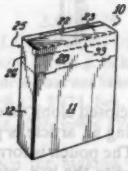
A wrap-around carrier and blank therefor wherein longitudinal separation in the heel area is provided with a horizontal separation bar or a plurality of tabs and lateral separation is provided in the heel area with the plurality of tabs cut from and pivotally attached to a sloping heel cutout panel. The carrier may be used with or without a shoulder partition, which partition provides both longitudinal and lateral separation in the shoulder area of the packaged articles. In a preferred embodiment, the shoulder partition comprises a V-shaped support with longitudinal partition tabs extending downwardly from the base thereof and lateral partition straps are rotated out of said support.

3,680,766

REDUCIBLE FLIP TOP BOX

Peter C. Collura, Stamford, Conn., and William P. Pintsak, Ossining, N.Y., assignors to Container Corporation of America, Chicago, Ill.

Filed July 17, 1970, Ser. No. 55,895
Int. Cl. B65d 37/00
U.S. Cl. 229—51 TC 2 Claims



A box is provided with a flip top which is movable to closing position after the movement of a wall flap to a position within the box interior. Such movement of the wall flap provides outward extending locking tabs which cooperate with closure tabs forming part of the flip top, so that the flip top is then locked into position. In one form of the invention a tear strip is

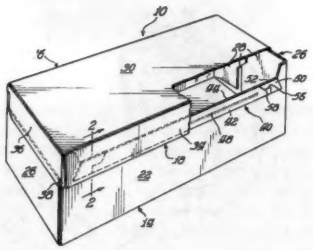
provided in the aforesaid wall flap, the tear strip extending between side wall portions and across the wall flap. When the tear strip is removed, the wall flap may be folded to the position normal to the wall panels. In both forms of the invention the subsequent folding of the flip top to locking position results in a box which is reduced in size.

3,680,767

HOODED CARTON WITH RECLOSURE LOCK

Richard G. De Lorenzo, Conshohocken, and Donald G. Luff, Lansdale, both of Pa., assignors to Container Corporation of America, Chicago, Ill.

Filed July 20, 1970, Ser. No. 56,476
Int. Cl. B65d 5/54
U.S. Cl. 229—51 TC 5 Claims



A reclosable, paperboard folding carton including a body with a hinged cover having a depending hood enclosing upper marginal areas of the body and including means on the body engageable with means on the cover hood for providing an interlocking connection therebetween upon reclosure of the carton after initial opening.

3,680,768

PLASTIC BAG WITH INTEGRAL POUCH AND METHOD FOR MAKING SAME

Barney Warren, Brooklyn, N.Y., assignor to Cellu-Craft, Inc., New Hyde Park, N.Y.

Filed Aug. 12, 1970, Ser. No. 63,187
Int. Cl. B65d 31/12
U.S. Cl. 229—56 6 Claims

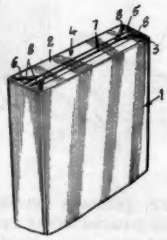
A plastic bag that is closed along three side edges and open at one edge for receiving an article is provided with a pouch on one outer surface. The pouch is formed of a second plastic layer that is heat sealed to the bag, preferably coincidentally with two side edges thereof. The upper and lower unsealed edges of the plastic layer are folded over to define a member having spacedly confronting edges. A sheet bearing appropriate indicia may be positioned in the pouch and be removably captured by the folded over edges of the second plastic layer. The indicia bearing sheet is readily removable from the pouch without disturbing the contents of the bag.

3,680,769

METHOD OF MANUFACTURE OF PLASTIC BAGS AND THE IMPROVED BAGS RESULTING THEREFROM

Jacques Siekierski, Sao Paulo, Brazil, assignor to ITAP S/A-Industria Tecnica De Artefatos Plasticos Rua Prof. Celestino Bourroul, Sao Paulo, Brazil

Filed June 18, 1970, Ser. No. 47,543
Int. Cl. B65d 33/16
U.S. Cl. 229—58 6 Claims



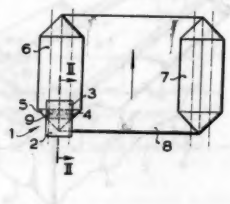
A multi-layer plastic bag with a valvular opening is formed by providing a multi-layer plastic tube, closing the bottom end of the tube by folding in end portions of opposite major walls over one another thereby forming pyramidal projections which are then folded over the folded end portions of the major walls whereupon the folded portions are secured by electronic stitching; and closing the top end of the tube in similar manner but with a valvular opening at one end of the top formed by slitting the tube wall to provide a flap, introducing a U-shaped band between upper end portions of opposite side walls of the tube, folding the flap over the bottom of the U-shaped band, folding the side portions of the U-shaped band down with side portions of the tube, and securing the folded portions by electronically stitching.

3,680,770

POCKET VALVE FOR VALVED BAGS MADE OF PLASTICS MATERIAL SHEETING AND HAVING CROSSED END CLOSURES

Reiner Muller, Wieda, and Fritz Achelpohl, Lengerich, both of Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed April 3, 1970, Ser. No. 25,538
Claims priority, application Germany, April 5, 1969, P 19 17 480.2; Aug. 7, 1969, P 19 40 210.9
Int. Cl. B65d 31/14
U.S. Cl. 229—62.5 5 Claims



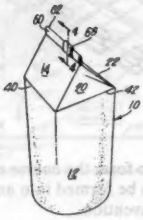
The pocket valve for a bag consists of a tube of plastics material sheeting, which tube is open in a portion of its length at its inner end along the two side edges. The lower of the two resulting flaps is backfolded and adhered to the corner tuck of the valve corner of the bag.

3,680,771

CLOSURE DEVICE FOR CONTAINERS

Ronald L. Blunsdon, Hamilton, Ontario, Canada, assignor to Continental Can Company of Canada Limited, Toronto, Ontario, Canada

Filed April 1, 1970, Ser. No. 24,616
Int. Cl. B65d 33/16
U.S. Cl. 229—65 6 Claims



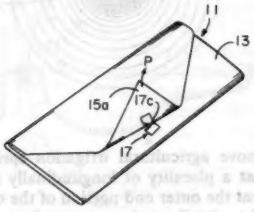
A container closure formed by a pair of panels in side-by-side relationship, a rigid projection on one of the panels and a clip adapted to cooperate with the ridge and panels to hold the panels in closed position with the rigid projection tending to prevent withdrawal of the clip.

3,680,772

SEALED CONTAINER ARRANGEMENT

Robert B. Hoover, Massilon, Ohio, assignor to Affiliated Hospital Products, Inc., St. Louis, Mo.

Filed Dec. 29, 1969, Ser. No. 888,265
Int. Cl. B65d 27/30
U.S. Cl. 229—79 19 Claims



A sealed container having a shell or envelope for removably containing in sealed relation an article, such as sterile, surgical gloves, and which incorporates a flexible closure flap, with a rupturable seal formed by a strip or slip of easily frangible sheet or web material, such as paper, which is folded and secured on one side of its fold to the outer face of the main body envelope or shell and on the other side of its fold to the inner face of the closure flap, the tear zone for the seal being formed by the interconnecting unsecured web or sheet fold portion of the seal.

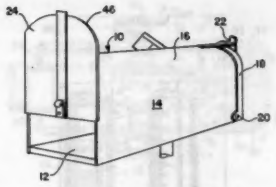
3,680,773

RURAL MAIL BOX

P. D. Thompson, 2550 Weymouth Rd., Winston-Salem, N.C.

Filed Aug. 19, 1970, Ser. No. 65,075
Int. Cl. B65d 91/00
U.S. Cl. 232—17 2 Claims

An entrance is provided in the rear wall of a conventional, single compartment, rural mail box to permit removal of the contents without stepping into the adjacent roadway. The entrance comprises a rear panel that opens in response to a force applied thereto in a direction transverse to the longitudinal axis of the main box.

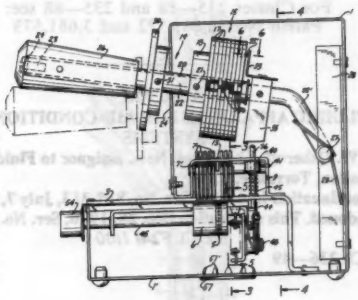


3,680,774

DEVICE FOR PUNCHING CARDS OR THE LIKE

Herman Post; Stephen Prigozy, both of Great Neck, and Orrin Millie, Flushing, all of N.Y., assignors to Robins Industries Corporation, Flushing, N.Y.

Filed April 15, 1970, Ser. No. 28,708
Int. Cl. B26f 1/04
U.S. Cl. 234—100 11 Claims



Device for punching cards or the like in which a card is fed stepwise beneath a row of punches which are movable between a rest and a punching position and selectively moved between the positions thereof by selector means comprising a drum having rows of punch-actuating portions. The drum is turnable about its axis, to bring a selected row of punch-actuating portions in alignment with the punches, and movable between an inactive and an active position for engaging and moving selected punches to the punching position.

3,680,775

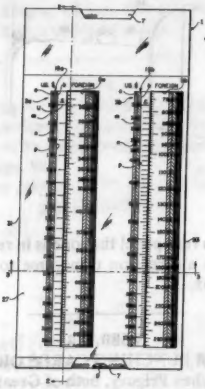
CALCULATING DEVICE

Walter K. Schwarz, and David J. Schlink, both of Peoria, Ill., assignors to The Peoria Journal Star, Inc., Peoria, Ill.

Filed April 13, 1971, Ser. No. 133,586
Int. Cl. G06g 1/04; G06c 19/02; G06g 1/12
U.S. Cl. 235—71 A 12 Claims

A calculating device for making mathematical computations constituted by a sleeve member, an endless belt and a slide member. There are longitudinally extending mathematical scales on both the sleeve member and the belt and the belt is trained around the ends of the slide member to form an assembly which is telescopically slidable into the sleeve. There are slots in the sleeve alongside the sleeve mathematical scale with which the belt scale comes into registry when the

slide/belt assembly is within the sleeve. A computation based on the relationship $z=f(x,y)$ may be made by setting x_1 on the



belt mathematical scale adjacent the identity operator on the sleeve mathematical scale and reading z_1 on the belt scale adjacent y_1 on the sleeve scale.

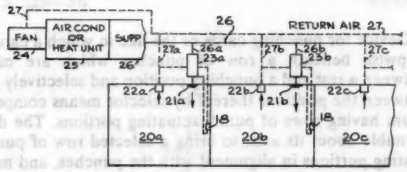
ERRATA

For Classes 235—88 and 235—88 see:
Patent Nos. 3,681,572 and 3,681,573

3,680,776
FLUIDIC APPARATUS FOR AIR-CONDITIONING SYSTEMS

Gene W. Osheroff, Las Vegas, Nev., assignor to Fluidtech Corporation, Torrance, Calif.

Continuation-in-part of Ser. No. 839,313, July 7, 1969, abandoned. This application Dec. 28, 1970, Ser. No. 101,901
Int. Cl. F24f *1/00*
U.S. Cl. 236—49 **27 Claims**



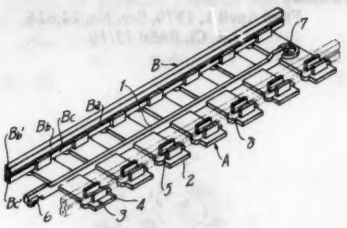
The present invention provides a fluidic oscillator in an air-conditioning system to deliver bursts of air at full volume as the terminal unit oscillates in response to the room thermostat. These bursts of air, short or long, would fulfill the register's volume requirements, thus maintaining full room comfort.

3,680,777
VARIABLE TRACK FOR A TOY VEHICLE

Toshikatsu Arai, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1970, Ser. No. 10,869
Claims priority, application Japan, Feb. 13, 1969, 44/12652
Int. Cl. A63h *19/30*
U.S. Cl. 238—10 E **3 Claims**

A track for a toy vehicle which comprises a plurality of pliable bed sections and a pair of pliable rails. The rails are removably attached to the bed sections in parallel spaced-

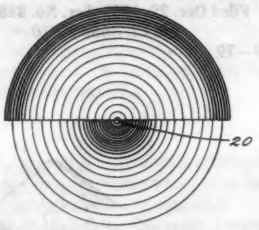


apart relationship to form the course of travel for the toy vehicle. The course can be formed into any desired shape according to the present invention.

3,680,778
IMPROVED WATER DISTRIBUTION IN THE OPERATION OF PIVOT MOVE AGRICULTURAL IRRIGATION SPRINKLER SYSTEMS

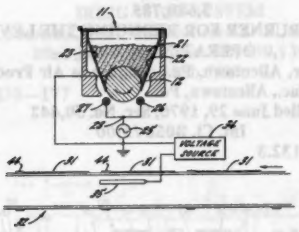
Donald R. Sisson, and Richard E. Hanson, both of Peoria, Ill., assignors to L. R. Nelson Mfg. Co., Inc., Peoria, Ill.

Filed July 21, 1970, Ser. No. 56,813
Int. Cl. B05b *17/00*
U.S. Cl. 239—1 **5 Claims**



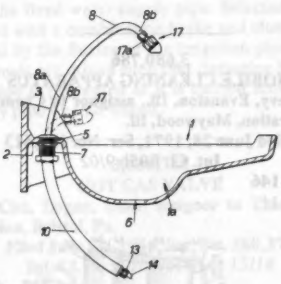
A pivot move agricultural irrigation sprinkler system in which at least a plurality of longitudinally spaced sprinkler heads adjacent the outer end portion of the conduit assembly are arranged to distribute the source of water within the adjacent portion of the conduit assembly onto the forward portion of the adjacent sprinkler head pattern area at an average application rate which is greater than the average application rate at which the water is applied to the rear portion of the adjacent sprinkler head pattern area by a ratio of the order of between 1.3 to 1 and 4.0 to 1, the water applied to the forward portion of the sprinkler head pattern area being distributed with a distribution pattern which rises rapidly to a maximum adjacent the leading portion of the sprinkler head pattern area and a sprinkler head for use in such a pivot move system having a pair of generally oppositely directed upwardly and outwardly extending outlets, an impulse arm mechanism operated by the stream issuing from one of the outlets which is smaller than the other larger and generally unobstructed outlet, for effecting a step-by-step incremental rotational movement in one direction through an arcuate extent of approximately 180° and a reversing mechanism for effecting a reverse movement of approximately 180° so that the streams from the two outlets will be distributed with a different distribution pattern and at different average application rates within two generally separate semi-circular pattern areas.

3,680,779
METHOD AND APPARATUS FOR ELECTROSTATIC SPRAYING
Dennis A. Reilly, Berkeley, Calif., assignor to Oxy-Dry Sprayer Corporation, Chicago, Ill.
Filed Oct. 5, 1970, Ser. No. 78,025
Int. Cl. B05b 5/00
U.S. Cl. 239—3 19 Claims



One or more auxiliary electric fields are established for an electrostatic powder sprayer to further control the movement of the powder particles from the area of the usual primary electric field to the surface to be coated, so that a more uniform powder profile is laid down on the surface to be coated and the amount of powder fly around is reduced.

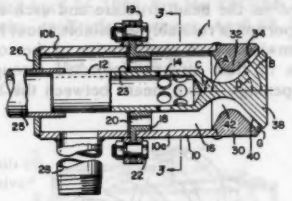
3,680,780
ABLUTIONARY APPLIANCES
Dennis C. Arbon, Cheltenham, England, assignor to Walker Crosweller & Company Limited, Cheltenham, England
Filed Feb. 23, 1971, Ser. No. 118,108
Int. Cl. E03b 9/20
U.S. Cl. 239—26 5 Claims



An ablutionary appliance comprising a water catchment member in which water cannot be retained, a water delivery pipe which is adjustable so that its outlet end can be disposed in a range of different positions over the catchment member, and at the outlet end, an adjustable spray nozzle is mounted for controlling the rate of flow of water and the trajectory of the water spray.

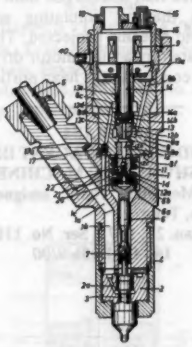
3,680,781
LIQUID SPRAY NOZZLE
Roland L. Lincoln, Salvag, Calif., assignor to Fuller Company
Filed Dec. 30, 1970, Ser. No. 102,578
Int. Cl. B05b 7/04
U.S. Cl. 239—431 11 Claims

A nozzle for spraying liquids over a wide range of liquid flow rates which includes a pair of concentric tubular members. Liquid to be sprayed is supplied to the internal tubular member and to a mixing chamber defined by the two tubular members through a plurality of ports in the internal tubular member. Compressed air is supplied to the outer tubular member and mixes with the liquid in the mixing chamber, and the mixture of liquid and compressed air is discharged through



a restricting orifice. The restricting orifice is defined by a smooth, substantially continuously restricting contour. The capacity of the spray nozzle as measured by liquid flow rate can be adjusted.

3,680,782
ELECTROMAGNETIC INJECTORS
Louis Monpetit, Etang-la-Ville, France; Robert Huber, Zumikon, Switzerland, and Jacek Ufnalewski, Marly-le-Roi, France, assignors to Societe des Procedes Modernes D'Injection Sopromi, Clichy, France
Filed Oct. 21, 1970, Ser. No. 82,775
Claims priority, application France, Oct. 24, 1969, 6936516
Int. Cl. F02m 41/16
U.S. Cl. 239—96 11 Claims

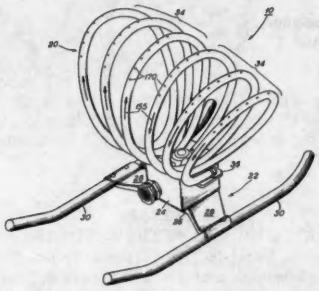


An electromagnetically controlled fuel injector for internal combustion engines wherein the injector needle is normally held on its seat by the pressure of the fuel in a counter-pressure chamber, the release of said pressure which sets the needle in its operative position being ensured by causing the controlling electromagnet to connect the counter pressure chamber no longer with the supply of fuel but with an exhaust channel returning the fuel to the supply; to this end, the electromagnet acts on a plunger incorporating a slide valve, ball valve or needle valve controlling channels provided in a nozzle surrounding the rod operating the injector needle which channels lead to the counter-pressure chamber, with the supply and with the exhaust.

3,680,783
FLUID SPREADING APPARATUS
Edward M. Springer, Chicago, Ill., assignor to Keith K. Nicolls, Glen Ellyn, Ill.
Filed Sept. 14, 1970, Ser. No. 71,763
Int. Cl. B05b 1/08
U.S. Cl. 239—101 15 Claims

Fluid spreading apparatus comprising a discharge head structure including at least two spaced apart head portions

adapted to direct fluid outwardly in different directions. Each head portion disclosed is a coil of tubing having several upstanding convolutions, each with outwardly directed fluid-emitting openings. The inner end portion of the tubing in each coil is fixed on the head structure and each corresponding outer end portion is rotatably adjustable about its own axis to vary the fanwise spread configuration of the coil to vary the trajectories of fluid streams projected through the fluid-emitting openings. Valve means between the head portions



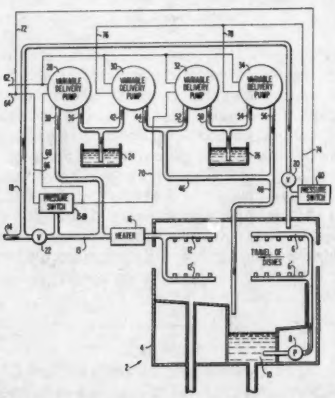
and in series with a supply conduit of fluid under pressure is operative cyclically to effect a gradual decrease in the flow of fluid from the supply conduit to one of the head portions and a gradual increase in the flow of fluid from the supply conduit to the other of the head portions. This cyclically decreases and increases the distance that discharged fluid is projected from the head portions thereby simulating an oscillating appearance in the fluid streams projected. The valve means is automatically operated by a fluid motor driven by fluid flowing from the supply conduit to the head portions.

3,680,784

DETERGENT AND WETTING AGENT DISPENSER FOR DISHWASHING MACHINES

Roger E. Fakes, Memphis, Tenn., assignor to Auto-Chlor System, Memphis, Tenn.

Filed Jan. 27, 1971, Ser. No. 110,052
Int. Cl. B05b 9/00
U.S. Cl. 239—126 **4 Claims**



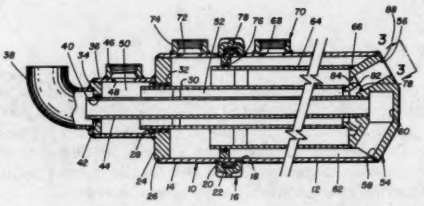
In a dishwashing machine wherein wash water containing detergent and a wetting agent is re-circulated from a sump over dishes at a washing station, rinse water containing a wetting agent is sprayed over dishes at a rinse station, and at least some of the rinse water is drained for make-up to the wash water sump, a feed system is provided for delivering a predetermined, regulatable ratio of detergent and wetting agent to the sump at start-up, and another predetermined regulatable amount of detergent to the sump during each rinse cycle so as to maintain in the wash water a constant ratio of detergent to wetting agent and constant concentration thereof in the wash water.

3,680,785

OXY-FUEL BURNER FOR REDUCING THE LEVEL OF OPERATING NOISE

Keith A. Miller, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed June 29, 1970, Ser. No. 50,442
Int. Cl. B05b 15/00
U.S. Cl. 239—132.3 **6 Claims**



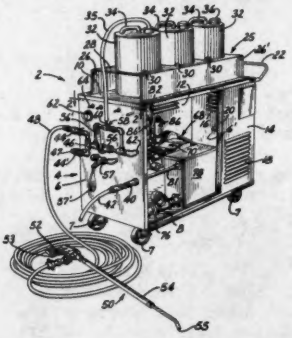
A metallurgical burner of the type having a nozzle end for producing a flame by combustion of fuel and an oxidizing fluid. The burner is characterized in that the nozzle contains a plurality of mixing cups surrounding and projecting beyond a plurality of pairs of fuel and oxidizing fluid discharge ports. The mixing cups are sized so that combustion takes place inside or at the mouth of each cup thereby reducing the operating noise level of the burner. Further features of the burner include fluid cooling and quick change capability for nozzle end replacement.

3,680,786

MOBILE CLEANING APPARATUS

Edward M. Levy, Evanston, Ill., assignor to Chemtrust Industries Corporation, Maywood, Ill.

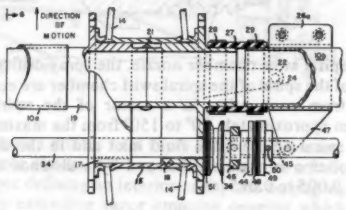
Filed June 28, 1971, Ser. No. 157,413
Int. Cl. B05b 9/02
U.S. Cl. 239—146 **1 Claim**



Mobile cleaning apparatus including a roller supported frame carrying a container for holding a supply of cleaning liquid, a sprayer head connected to a length of flexible tubing for spraying a cleaning liquid entrained in a stream of water, a venturi unit having a main water flow passageway and a cleaning liquid inlet, a water flow control valve connected across

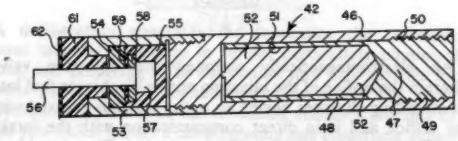
the passageway of the venturi unit, and a pair of pressure regulating valves connected in parallel between the outlet of the pump and the inlet of the venturi unit and water flow control valve. The pressure regulating valves have water bypassing outlets which open at two widely different pressures. A water control valve is placed in the water bypass line of the pressure regulating valve which opens at the lower pressure.

3,680,787
IRRIGATION SYSTEM
Roger M. Sherman, 3381 Stevens Creek Blvd., San Jose, Calif.
Filed July 2, 1971, Ser. No. 159,138
Int. Cl. B05b *3/00*
U.S. Cl. 239—177 **10 Claims**



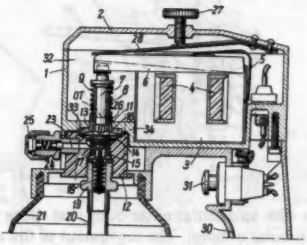
An irrigation system provided with a long pipe supplying irrigation water to a field of predetermined area. One end of the pipe is attached to a fixed water supply pipe by rotatable coupling. The irrigation pipe is provided with supporting wheels which are rotatable on fixed bearings provided to the irrigation pipe at spaced points. The wheels are driven from a drive shaft supported by said fixed bearings alongside of the pipe and the shaft is driven by a stationary electric motor supported on the fixed water supply pipe. Selected wheel drives are provided with a combination brake and clutch device that is controlled by the flexing of the irrigation pipe whereby the selected wheels are driven such that damaging bending of the irrigation pipe is prevented as it is carried around said fixed water supply pipe by said wheels.

3,680,788
HOT GAS VALVE
Duane M. Cox, Logan, Utah, assignor to Thiokol Chemical Corporation, Bristol, Pa.
Filed June 20, 1966, Ser. No. 560,375
Int. Cl. B63h *25/46*; B64c *15/16*
U.S. Cl. 239—265.23 **13 Claims**



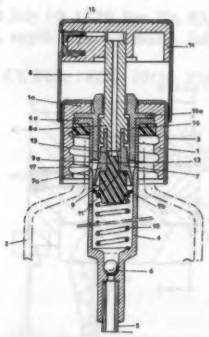
A valve for operation in a hot gas environment having a hydraulically operated movable member which is hollow and open at one end. Secured in the shell opening is a hollow cup-like insert which is formed of a porous material impregnated with a coolant material which when operated to open and close a hot gas passage thereby controlling flow of hot gas therethrough.

3,680,789
SPRAY GUN
Josef Wagner, Markdorferstr. 165, Friedrichshafen-Fischbach, Germany
Filed April 16, 1971, Ser. No. 134,634
Claims priority, application Germany, April 18, 1970, P 20 18 789.7
Int. Cl. B05b *9/04*
U.S. Cl. 239—332 **10 Claims**



A spray gun, particularly useful for spraying paints, having an electric vibrator during a piston pump submerged in an oil bath which hydraulically drives a diaphragm pumping the medium to be sprayed to a spray nozzle and separating the medium from the piston pump. The quantity of the medium to be sprayed is adjusted by controlling the stroke of the piston.

3,680,790
DIPPER TUBE SPRAYER
Michel Boris, Paris, France, assignor to Societe Technique de Pulverisation, Paris, France
Filed March 24, 1971, Ser. No. 127,644
Claims priority, application France, March 26, 1970, 7011074
Int. Cl. B05b *7/30*
U.S. Cl. 239—353 **1 Claim**

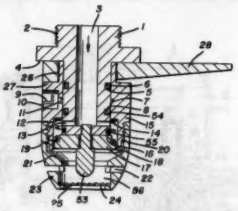


A sprayer wherein the dipper tube dipping into a liquid-carrying container is connected with a tube ending with a spraying nozzle through a sleeve-shaped piston controlled by the depression of last mentioned tube. The valve closing normally the passage through the piston is urged away by said depression of the tube against the action of a spring and its novelty resides in the provision of a thin peripheral lip provided in said valve and frictionally engaging the inner surface of the chamber so as to produce transiently a compression in said chamber when the valve is shifted by the sliding tube, after which the compressed liquid passes past the deformed lip towards the nozzle.

3,680,791
AERATOR VALVE AND DENTAL CLEANSER APPLIANCE

Clive C. Morton, 33120 Arlesford, Solon, Ohio

Filed March 20, 1970, Ser. No. 21,399
Int. Cl. E03c 1/08
U.S. Cl. 239—428.5 6 Claims

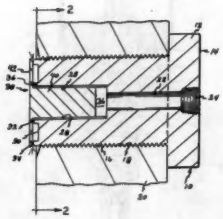


A valve with an annular outer body that slides up and down a central tubular column. The movement of the annular outer body relative to the central tubular column is achieved by the movement about a fulcrum of a lever positioned between the annular outer body and a flange on the central tubular column. This lever is free to rotate laterally about the axis of the annular outer body. The central tubular column has orifices around its periphery that allows liquids to pass through and on into one or more exits depending upon the relative position of the annular outer body to this central column. When the lever is actuated, the flow of liquid is diverted through an exit interconnecting with a mixing chamber. The pressure of the liquid entering the valve forces the liquid through the mixing chamber and on through a flexible hose connecting the mixing chamber with a dental appliance for manually directing the jet of liquid.

3,680,792
FLUID DISCHARGE NOZZLE

Lawrence A. Schott, 15940 Warwick, Detroit, Mich.

Filed Sept. 21, 1970, Ser. No. 73,858
Int. Cl. B05b 1/32
U.S. Cl. 239—452 12 Claims

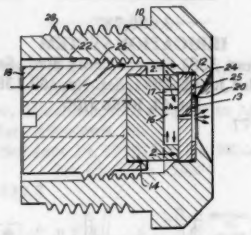


A fluid discharge nozzle which includes a main body having a fluid inlet passage connected with an annular groove or recess in the end face and located closely adjacent to the peripheral edge thereof, and a cap member substantially coextensive with and overlying the grooved or recessed end of the nozzle body, the cap being secured to the body in a manner to compress its peripheral portion against the outer peripheral edge of the groove or recess in the body with a pressure which will normally close the groove or recess to escape of fluid, with the cap member being slightly flexible such that when fluid pressure reaches a predetermined value, it will open peripherally and produce a substantially fan-shaped spray of fluid between the outer edge of the groove or recess and the outer edge of the cap member.

3,680,793
ECCENTRIC SPIRAL SWIRL CHAMBER NOZZLE

Roger W. Tate, Windsor Heights, and Richard L. Wilcox, Adel, both of Iowa, assignors to Delavan Manufacturing Company

Filed Nov. 9, 1970, Ser. No. 87,793
Int. Cl. B05b 1/34
U.S. Cl. 239—468 5 Claims

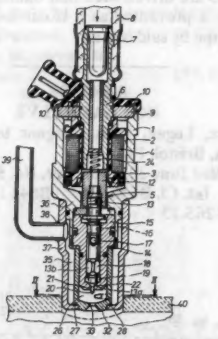


In a spiral swirl chamber nozzle, the spray orifice and axial origin of the spiral of the spiral swirl chamber are eccentrically offset from each other in a sector of the swirl chamber between approximately 90° to 150° from the maximum radius of the spiral adjacent the fluid inlet and in the direction of fluid rotation in the chamber and by a distance of approximately 0.005 to 0.015 inch.

3,680,794
ELECTROMAGNETICALLY OPERATED FUEL INJECTION VALVE

Peter Romann, Stuttgart; Heinrich Knapp, Leonberg-Silberberg, and Paul Fussner, Sindelfingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 26, 1971, Ser. No. 166,211
Claims priority, application Germany, Aug. 4, 1970, P 20 38 646.3
Int. Cl. B05b 1/30
U.S. Cl. 239—585 10 Claims



An electromagnetically operated fuel injection valve wherein the orifice of the injection nozzle discharges fuel into an atomizing chamber having an outlet which is co-axial with the orifice and is in direct communication with the intake manifold of an internal combustion engine. The chamber is defined by a cylindrical inner sleeve having one or more tangential openings for admission of air which atomizes the fuel in the chamber prior to entry into the manifold. The quantity of air admitted by way of the opening or openings amounts to between one-third and one-half of the quantity required by the engine during idling. The inner sleeve is surrounded by an outer sleeve which defines therewith an air-filled compartment in communication with the opening or openings of the inner sleeve.

3,680,795

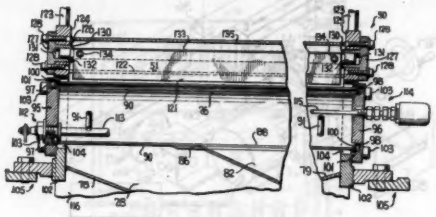
VAPOR KNIFE

Raymond F. Galitz, La Orange, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 755,889, Aug. 28, 1968, Pat. No. 3,561,130. This application Aug. 10, 1970, Ser. No. 62,550

Int. Cl. B05b *15/08*

U.S. Cl. 239—587 6 Claims



This disclosure relates to a vapor knife for directing emission of a vapor stream. The vapor knife includes a hollow tubular member defining an interior cavity and having an elongated axially extending vapor emission opening which is in communication with the cavity and the exterior of the tubular member. The vapor knife directs a wide jet of vapor against a printed or coated article to effect the treatment of the article with the vapor.

3,680,796

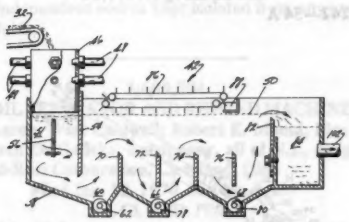
DEFIBERATION APPARATUS FOR SEPARATING CELLULOSIC FIBROUS MATERIAL FROM REFUSE

Sergio F. Galeano, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed June 2, 1970, Ser. No. 42,783

Int. Cl. B03b *7/00*

U.S. Cl. 241—21 5 Claims



A defiberation apparatus for separating the cellulosic fibrous material contained in refuse, particularly municipal refuse, and preparing it for conversion into pulp suitable for various paper product manufacturing purposes. The novel defiberation apparatus of this invention utilizes a plurality of water jets which impart a disintegrating and classifying action to the refuse and place the cellulosic fibers in a liquid suspension. This liquid suspension or slurry then passes through three hoppers in the defiberation apparatus wherein the non-cellulosic solids are removed on screw conveyors.

ERRATUM

For Class 241—46 see:
Patent No. 3,680,829

3,680,797

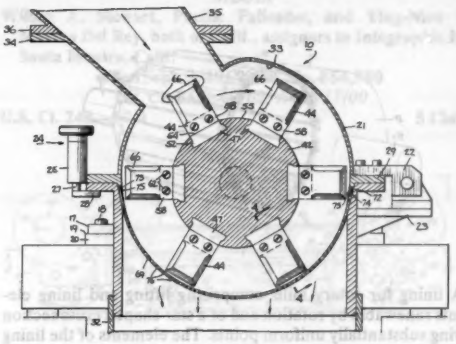
MILL

Gordon W. Covey, 11 Glendale Rd., Summit, N.J.

Filed Nov. 28, 1969, Ser. No. 880,826

Int. Cl. B02c *13/06, 13/28*

U.S. Cl. 241—73 15 Claims



Various pieces of raw or scrap plastic, foods, pharmaceuticals, chemicals both dry and wet, materials are fed into the mill and reduced in size into particles in a size range of from 1 to 3 microns to larger micron sizes. The rotor has a plurality of rows of blades mounted thereon which serve to reduce the fed materials into the smaller sizes. The screen below the rotor permits the exiting of the desired sizes from the mill.

3,680,798

GRANULATING APPARATUS

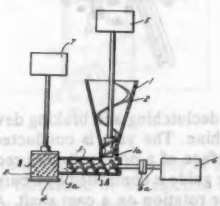
Wilhelm Moser, Ariendorf, near Honningen; Wilhelm Wirks, and Karl-Heinz Ackermann, both of Bad Honningen, all of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

Filed July 10, 1970, Ser. No. 53,956

Claims priority, application Germany, July 19, 1969, P 19 36 923.4

Int. Cl. B02c *18/30, 19/20, 25/00*

U.S. Cl. 241—93 9 Claims



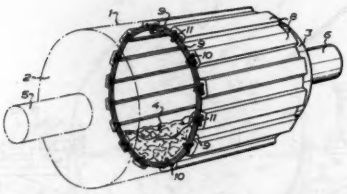
A fine crystalline material is fed to a pressure screw rotating in a casing and conveying the material under pressure to the outlet of the casing. The material is pressed through an extruder head rotating directly in front of the outlet and provided with a plurality of perforations which are bounded at one side with a projecting nose which cuts a predetermined quantity out of the pressure supplied material to issue in form of granules. Separate drives are provided for adjusting the rotations per minute of the pressure screw and the extruder head separately.

3,680,799

LININGS FOR ROTARY MILLS

Stig Lennart Hallerback, Lunda, Sweden, assignor to Trelleborgs Gummifabriks Aktiebolag, Trelleborg, Sweden

Filed Sept. 24, 1970, Ser. No. 75,125
Claims priority, application Sweden, Sept. 25, 1969, 13162/69
Int. Cl. B02c 17/22
U.S. Cl. 241—183 18 Claims



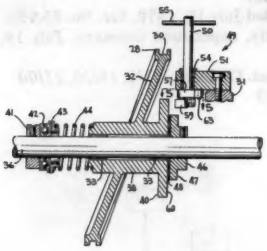
A lining for rotary mills comprising lifting and lining elements renewable by rotation and of a star-shaped cross section having substantially uniform points. The elements of the lining may have inner cooling passages constituted by tubes. The tubes may serve as rotational axes and supporting elements for the elements of the lining.

3,680,800

TRAVERSE CAM DECLUTCHING DEVICE FOR YARN TAKE-UP APPARATUS

Kenneth Brooks, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,110
Int. Cl. B65h 54/28
U.S. Cl. 242—43 6 Claims



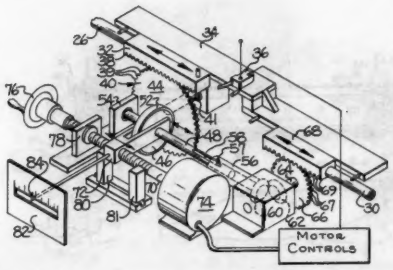
A traverse cam declutching and braking device for use in a yarn take-up machine. The yarn is conducted by a traverse guide onto the surface of a print roll. The reciprocating motion of the traverse guide is controlled by a barrel cam which is freely mounted for rotation on a cam shaft. A friction faced clutch plate is fixedly secured to the cam shaft in juxtaposed relation to a corresponding flange on the barrel cam. The clutch includes a lever on the frame of the machine. The lever is mounted for rotation about an axis perpendicular to the cam shaft and has a head adjacent to a radial flange on the cam. A roller and a friction pad are mounted on the head at a fixed distance from the lever axis so that rotation of the lever causes the roller and friction pad sequentially to engage the cam flange, thereby displacing the cam axially out of engagement with the clutch plate, while allowing the cam shaft to continue to rotate. The friction pad acts as a brake for the disengaged cam.

3,680,801

YARN TRAVERSE MECHANSM

Carl L. Henry, Hickory, N.C., assignor to Regal Manufacturing Company, Hickory, N.C.

Filed July 31, 1970, Ser. No. 60,042
Int. Cl. B65h 54/32
U.S. Cl. 242—43.1 11 Claims



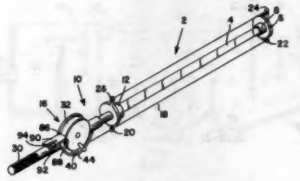
A yarn guide traverse mechanism for building a relatively large yarn package having uniformly tapered ends comprising a first wheel adapted to be oscillated by the drive motor of the winding machine, and a second wheel having a peripheral edge adapted to frictionally contact the front surface of the first wheel such that the second wheel is also oscillated. Means are provided for translating the second wheel radially inwardly along the front surface of the first wheel such that the oscillations of the second wheel are gradually diminished in relation to the oscillations of the first wheel. The second wheel is suitably connected to a linkage carrying the yarn guide, such that the linkage is reciprocated to an extent controlled by the extent of the oscillations of the second wheel.

3,680,802

DAMPED RESILIENT SELF-ERECTING MEANS

Rene L. Guerster, Maple Glen, Pa., assignor to Ametek, Inc., New York, N.Y.

Filed June 3, 1970, Ser. No. 43,103
Int. Cl. H01g 1/10, 1/28
U.S. Cl. 242—54 A 6 Claims

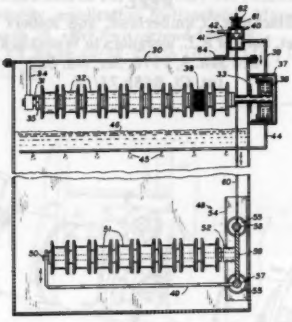


A self-erecting tube having a helical axially extending ribbon of spring material with adjacent turns set to coil tightly in overlapping and telescoping engagement is mounted between a pair of support members one of which supports a reel having coiled thereon a line connected to the other support member. A spring motor is connected to the reel in a manner such that as the tube erects the reel is rotated by the line causing the spring motor to be wound and thus retard the speed of erection of the tube. Means to rotate the reel to wind in the line, compress the tube into a storage position, and unwind the spring motor are provided. A second embodiment differs in having ratchet means to retard the erection of the tube. A third embodiment is provided with a dashpot damper to retard the erection of the tube.

3,680,803
TURBINE DRIVE FOR PHOTOGRAPHIC FILM PROCESSING MACHINES

Victor Takata, Cambridge, Mass., assignor to Artisan Industries Inc., Waltham, Mass.

Filed Aug. 4, 1970, Ser. No. 60,837
Int. Cl. B65h 51/20
U.S. Cl. 242—55.01 30 Claims

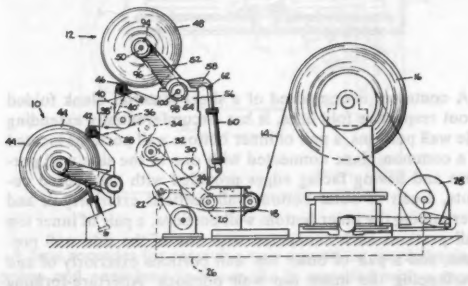


A drive for photographic film spools and film spool shafts includes a turbine wheel for rotating a shaft carrying a plurality of spools on that shaft with the speed of the shaft and spools modulated in response to changes in tension of the film carried on the spools. In another embodiment the shaft is driven by a turbine at an established speed with at least some of the film spools on the shaft being individually turbine driven to an overspeed of the shaft modulated in accordance with changes in film tension. In yet other embodiments there are turbine drives for individual spools rotatably mounted on stationary shafts, again with spool speeds being modulated according to changes in film tension. Drive modulation controls may be for a greater or smaller number of spools, and signals for modulation may originate in changes in tension either in film immediately passing over the spools whose speed is to be modulated or in film at a removed location. Fluid for energizing the turbine wheels associated with film spools or spool shafts may be either fluid used in the course of film processing or fluid from an independent source kept isolated from any processing fluid or fluids.

3,680,804
FOIL SEPARATOR AND REWIND MACHINE

Charles Aaron, West Caldwell; Robert E. Mount, Pine Brook, and Gerrit De Gelleke, Parsippany, all of N.J., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Jan. 12, 1970, Ser. No. 2,137
Int. Cl. B65h 17/02
U.S. Cl. 242—67.3 15 Claims

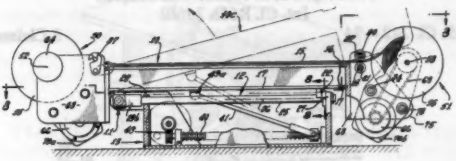


This invention relates to a machine for continuously separating and rewinding webs of foil material wherein the supply roll, dancer roll, separator roll, rewind rolls, ironing rolls, rewind roll shaft's driving coupling and rewind roll core mounting means are all constructed and arranged to permit high speed and high quality operation.

3,680,805
LIGHT TABLE WITH MULTIPLE AXIS TILTING, AND TENSION CONTROL OF TRAVELING ILLUMINATED MEDIA

Wilton A. Stewart, Pacific Palisades, and Ying-Nien Yu, Marina Del Rey, both of Calif., assignors to Integraphic Inc., Santa Monica, Calif.

Filed Sept. 3, 1969, Ser. No. 854,980
Int. Cl. B65h 17/02; A47b 37/00
U.S. Cl. 242—67.4 5 Claims

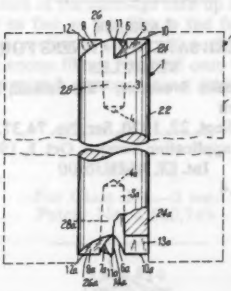


The invention concerns a light table having capability for adjustable tilting in multiple modes and to extreme angularity relative to horizontal, and with further provision for rapid reversal of film travel at any speed without loss of film tension, both hand and motor operation being enabled.

3,680,806
WINDING MANDREL

Georg Obermaier, Munich, and Anton Stangl, Regensburg, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 30, 1970, Ser. No. 76,670
Int. Cl. B65h 75/02
U.S. Cl. 242—68 8 Claims



A winding mandrel for winding webs of a conductor and a dielectric in the formation of an electric capacitor may be made of a plastic material to which the webs may be attached and is of a length less than the width of the webs so that when it is left in place in the completed capacitor the mandrel will have its ends recessed inwardly from the outer end faces of the completed capacitor. To facilitate winding of webs on the shorter winding mandrel the generally cylindrical body member of the mandrel has opposite first and second ends with at least one of the ends having a configuration including a self-centering bore and a tooth means. The bore is in the shape of a conicalfrustrum with a cone shaped smaller inner end. The tooth means includes a plurality of teeth shaped complementary to a winding chuck means. Each tooth is configured to have a generally flat surface lying in a generally longitudinal

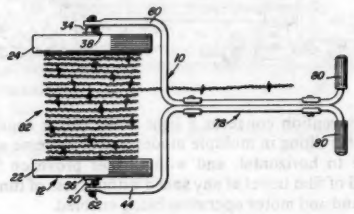
plane with a sloping surface adjacent the inner end of the flat surface and extending upwardly therefrom. The outer end of the generally flat surface intersects a narrow generally planar surface extending generally transverse to both the axis of the body member and the flat surface. The opposite edge of the narrow planar surface intersects the upwardly sloping surface from the next adjacent tooth. Four teeth are advantageously provided on an end. The teeth may be provided on both ends and may be set to have the sloping surface face in the same or opposite directions on each end. Mandrels of different lengths may be provided with each different length having a different color for identification.

3,680,807

WIRE STRINGING RIG

Warren D. Fortson, 115 W. Lakeview Dr., Clinton, Miss.

Filed April 2, 1969, Ser. No. 812,639
Int. Cl. B65h *75/40*
U.S. Cl. 242—94 5 Claims



A roller assembly for rolling over the ground either by hand or by being pushed or pulled by a powered vehicle. The roller assembly may be used singly or in plural form and includes opposite end large diameter wheel portions and a diametrically reduced center portion rotatable with the wheel portions and upon which a spool of wire, of a diameter less than the diameter of the wheel portions, is disposed for rotation with and unwinding from the reduced center portion of the roller assembly.

3,680,808

INERTIA REEL SAFETY HARNESS FOR USE IN VEHICLES

Gustav Elnar Wilhelm Svensson, Villa Solhall, Box 61 S-310 33, Holm, Sweden

Filed Sept. 22, 1970, Ser. No. 74,373
Claims priority, application Sweden, Oct. 1, 1969, 13493/69
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 7 Claims

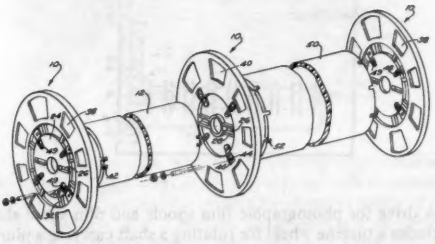
An improved inertia reel safety harness for use in vehicles, the safety harness being of the kind having a reel-up mechanism with a spindle and a cylindrical head rotating therewith. The head is provided at its one end portion with a ratchet wheel, and a spring counteracting unwinding of the harness. A runner ring is provided in a groove extending peripherally of the head, the diameter of said runner ring exceeding that of the head, whereby a gap is formed beneath the same when the runner ring is in position of rest (neutral position). When a sudden pulling force is exerted on the harness, the runner ring works as a pendulum influencing a spring means which displaces a catch means, which preferably is shaped as a wedge, into engagement with the teeth of the ratchet wheel, thus locking the harness against further unwinding. On the other hand, when the harness is being paid out slowly, the runner ring remains in its neutral position, such that the harness is only influenced by the spring counteracting unwinding but not locked as a result of the displacement of the runner ring.

3,680,809

REEL

Dwight W. Blackmer, Cumberland, and Robert N. Bernier, Woonsocket, both of R.I., assignors to Wanskuck Company

Filed Jan. 5, 1970, Ser. No. 660
Int. Cl. B65h *75/14*
U.S. Cl. 242—118.6 4 Claims



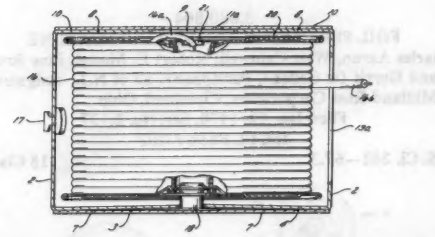
A wire reel having identical molded heads with intermeshing fittings formed on opposite sides of the heads, said fittings being positioned with respect to the center of the heads so that the fittings on one side intermesh with a barrel of one diameter and the fittings on the other side intermesh with a barrel of another diameter.

3,680,810

PAY-OUT CONTAINER FOR SPOOLED WIRE AND ANALOGOUS ELONGATED ELEMENTS

Benjamin Jarmalow, Suffern, N.Y., assignor to Saxton Products, Inc., Congers, N.Y.

Filed Feb. 16, 1971, Ser. No. 115,210
Int. Cl. B65h *55/00*
U.S. Cl. 242—171 8 Claims



A container is composed of a sheet material blank folded about respective fold lines. It has circumferentially extending side wall portions, a pair of inner bottom wall portions located in a common plane connected with one of the side wall portions and having facing edges provided with juxtaposed cutouts, a pair of outer bottom wall portions exteriorly of and overlapping the inner bottom wall portions, a pair of inner top wall portions each connected with one of the side wall portions, and a pair of outer top wall portions exteriorly of and overlapping the inner top wall portions. Aperture-forming means is provided in at least one of the side wall portions to enable egress of the elongated element accommodated in the interior of the container and bearing means is provided in the

cutouts so as to support a spool carrying the elongated element turnable about an axis intersecting the top and bottom wall portions.

3,680,811

KINEMATOGRAPHIC APPARATUS

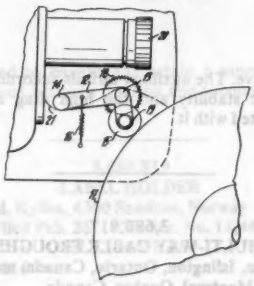
Jean Thevenaz, Grandson, Switzerland, assignor to Paillard S.A., Sainte-Croix, Vaud, Switzerland

Filed March 10, 1970, Ser. No. 18,201

Claims priority, application Switzerland, March 24, 1969, 4364/69, March 24, 1969 Switzerland 4365/69

Int. Cl. B65h *59/38*; G03b *1/04*; G11b *15/32*

U.S. Cl. 242—189 6 Claims



A system for uniformizing the speed at which a kinematographic film is wound round the take-up spool in a view-taking or projecting apparatus by means of a feeler engaging a loop formed by the film between the exposure gate and said spool. When ever the speed of winding excessively tensions the film passing out of the gate, the loop shrinks and the stops the spool either by opening a switch in the circuit feeding a driving motor or by mechanically acting on a roller or gear driving the spool For reversed progression a second roller or gear can be used which is similarly controlled by the feeler.

3,680,812

TAPE RECORDER

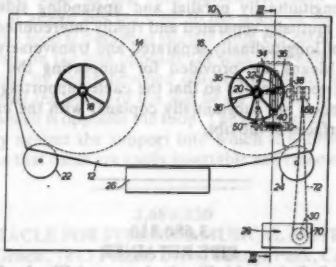
Wilfred H. G. Rayner, London, England, assignor to Clarke and Smith Manufacturing Company Limited

Filed April 9, 1917, Ser. No. 26,815

Claims priority, application Great Britain, April 11, 1969, 18,763/69

Int. Cl. G03b *1/04*; G11b *15/32*, *23/04*

U.S. Cl. 242—199 8 Claims



A tape recorder for receiving tape wound on spools having spokes and contained in a cassette is provided with a tape position indicator driven by a mechanism which is mounted on the underside of the tape deck and includes a rotatable sprocket wheel having teeth which project through a slot in the tape deck to engage the spokes of one of the spools for rotation of the sprocket wheel by the spool and a pulley-and-belt arrangement for driving the tape-position indicator in dependence upon the rotation of the sprocket wheel. The sprocket wheel is resiliently mounted so that it may be moved against a resilient bias to retract the teeth from the slot.

3,680,813

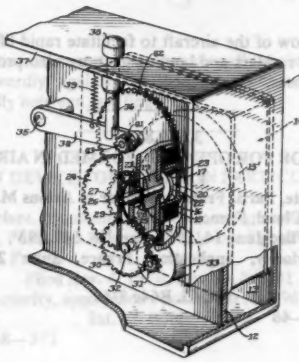
TWO-SPEED TAKE-UP DRIVE FOR CAMERA

Henry J. Koeber, Deerfield, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed July 2, 1970, Ser. No. 51,871

Int. Cl. G03b *1/04*

U.S. Cl. 242—205 8 Claims



A unidirectional take-up drive mechanism of a camera of the type which accepts a film-loaded cartridge is provided with a pair of movable gears mounted on a pivoted lever whereby the gears can be moved into or out of meshing engagement with another pair of gears that drive the cartridge take-up in normal filming operation. The first pair of gears change the gear ratio of the take-up drive mechanism to slow down the rotation of the cartridge take-up so that it does not wind the film as fast as the film is fed from the cartridge supply, thereby creating an excess of loosely wound film in the cartridge. The excess film is rewound onto the supply, which film may be exposed a second time during a lap dissolve sequence.

ERRATUM

For Class 244—3 see:
Patent No. 3,680,749

3,680,814

AIRCRAFT

Milford Geary, Box 26, Polo, Ill.

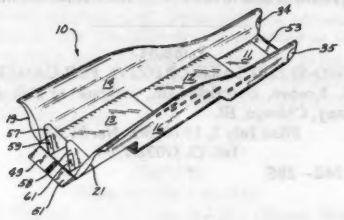
Filed Feb. 11, 1970, Ser. No. 10,331

Int. Cl. B64c *1/00*

U.S. Cl. 244—13 8 Claims

An aircraft of reduced drag adapted for buoyancy upon the thrust stream of its engines. The aircraft having a forwardly disposed base having a generally horizontally disposed upper surface, first and second platforms arranged in stepped relationship to the base, a pair of upwardly and outwardly extended sides interconnecting the base and platforms; a first set of engines adapted to draw air from above the base and thrust the air rearwardly below the first platform; a second set of engines adapted to draw air from above the first platform and thrust the air rearwardly below the second platform, the aircraft being buoyantly supported on the thrust stream. Elevators are provided to direct the flow of thrust from the engines

and a forwardly disposed retractable member pivotally connected to the base and disposed between the sides to occlude a direct flow of air into the first engines to effect a cavity reduction at the prow of the aircraft to facilitate rapid lift thereto. Conventional rudders and landing gear are also provided for obvious purposes.



3,680,815

OBTURATOR FOR OPENINGS FORMED IN AIRCRAFT FAIRINGS

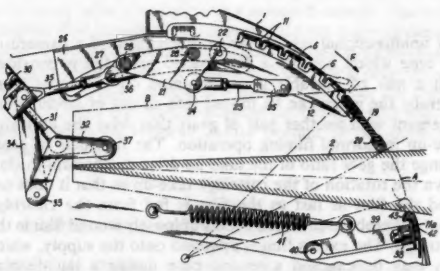
Henri Deplante, Paris, France, assignor to Avions Marcel Dassult, Saint-Cloud, France

Filed June 14, 1967, Ser. No. 647,293

Claims priority, application France, June 29, 1966, 6667491

Int. Cl. B64c *3/40*

U.S. Cl. 244—46 **10 Claims**



An obturator device of openings formed in aircraft surfaces, usable in particular for closing openings made in the sides of variable-geometry aircraft fuselages for accommodating the movable wings therein, characterized in that it comprises at least one curtain formed of parallel blades arranged in closely spaced juxtaposed relationship and mounted on ribs or crosspieces which interconnect said blades and are movable on guides independently of one another.

3,680,816

AIRCRAFT HAVING AUXILIARY AIRFOILS

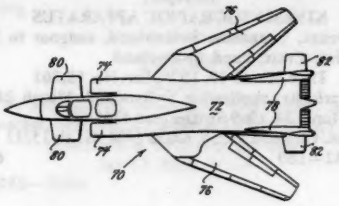
John F. Mello, Hazelwood, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Dec. 29, 1969, Ser. No. 888,443

Int. Cl. B64c *3/08, 5/10*

U.S. Cl. 244—46 **4 Claims**

An aircraft has a fuselage from which wings and horizontal stabilizers extend. At low speeds the lifting forces exerted by the airstream passing over the wings create a moment about the center of gravity for the aircraft, and that moment is offset by an opposite or trim force exerted on the horizontal stabilizers. At higher speeds the resultant of the lifting forces on the wings shifts rearwardly and thereby increases the moment about the center of gravity. At such speeds auxiliary airfoils extend from the fuselage to counteract the increased moment so that the trim force on the horizontal stabilizers does not become excessive. The auxiliary airfoils accordingly eliminate excessive static stability and the high drag and structural stresses associated with it.



3,680,817

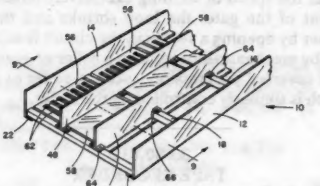
MULTI-WAY CABLE TROUGHS

James E. Gogan, Islington, Ontario, Canada, assignor to Electrovert *Ltd.*, Montreal, Quebec, Canada

Filed Nov. 28, 1969, Ser. No. 880,699

Int. Cl. H02g *3/04;* F16l *3/22*

U.S. Cl. 248—68 **14 Claims**



This invention relates to ladder-type troughs for supporting electric cables, which troughs are adapted to receive and support cable-supporting modular panels of both ventilated and non-ventilated constructions. The troughs are formed with a pair of longitudinally parallel and upstanding side flanges which are mutually separated and rigidly interconnected by a plurality of longitudinally separated and transversely extending ribs. Means are provided for supporting the modular panels between the ribs so that the cable-supporting surfaces of such panels are substantially coplanar with the cable-supporting surfaces of the ribs.

3,680,818

PIPE RETAINER

Raymond S. Bujnowski, Birmingham, and Charles R. Oliver, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

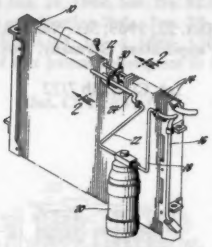
Filed Aug. 21, 1970, Ser. No. 65,979

Int. Cl. F16l *3/02*

U.S. Cl. 248—73 **2 Claims**

A pipe retainer having a first body portion with a pair of op-

posed jaws therein adapted to engage a pair of spaced apart tubes and a second body portion having a single pipe jaw therein adapted to engage and retain a pipe, and a lateral flange interposed between the first and second body portions of the retainer.

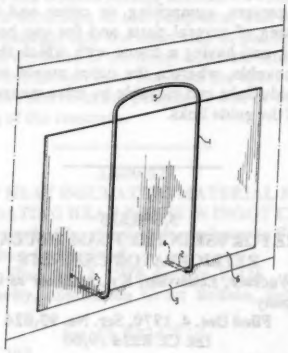


3,680,819

LABEL HOLDER

Martin Meland, Kylles, 4300 Sandnes, Norway

Filed Feb. 26, 1970, Ser. No. 14,468
Int. Cl. A47f 7/00
U.S. Cl. 248—216 **1 Claim**



A label holder is pointed so as to be drivable, and comprises a U-shaped loop having ends parallel to each other and disposed at angles less than 90° to the plane of the loop. The bend of the loop is displaced slightly from the plane of the rest of the loop, on the side opposite the legs. The ends of the legs are pointed by being bevelled only on the same side as the loop, so that the points of the legs lie on the side of the axis of the legs which is opposite the loop. The label holder thus bears resiliently against the support into which it is driven, at the same time that cards are easily insertable and removable.

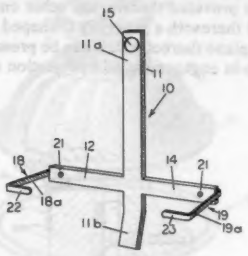
3,680,820

RECEPTACLE FOR STRINGED MUSICAL INSTRUMENT

John D. Gracie, 7013 Pomelo Drive, Canoga Park, Calif.

Filed July 22, 1970, Ser. No. 57,039
Int. Cl. A47j 7/00
U.S. Cl. 248—314 **3 Claims**

A receptacle for a stringed musical instrument consisting of horizontally spaced restraining fingers having portions spaced outwardly from a support surface by a distance greater than the width of the instrument and a contact point on said surface positioned above said restraining fingers, and a wedge member angled outwardly from said surface below said fingers to cause the instrument to move outwardly against the fingers and rearwardly against the contact point when inserted downwardly between said fingers.

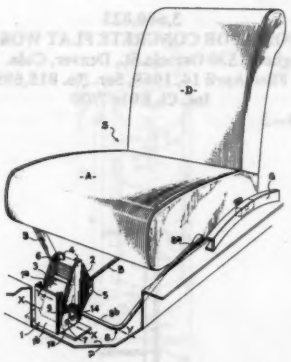


3,680,821

SUPPORT DEVICE FOR A SEAT, IN PARTICULAR FOR A VEHICLE

Alain Barriere, Montbellard, France, assignor to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, France

Filed Nov. 4, 1970, Ser. No. 86,701
Claims priority, application France, Dec. 2, 1969, 6941569
Int. Cl. B60n 1/02
U.S. Cl. 248—371 **4 Claims**



A device adapted to permit a fine and precise adjustment in height of the front part of the cushion of a seat independently of the adjustment in the longitudinal direction of the seat. The device comprises a rack to which is pivoted a link and a stop pawl mounted to pivot about an axis on a support fixed to the floor. A mechanism which locks the pawl in engagement with the rack comprises a lever which effects successively in the course of the same travel the unlocking of the pawl and its disengagement from the rack.

3,680,822

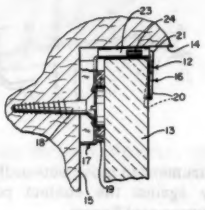
FLOOR TO CEILING WALL MIRROR FASTENING CLIP

Thomas D. Kurtz, Rock Falls, Ill., assignor to Kurtz Enterprises, Inc., Rock Falls, Ill.

Filed May 15, 1970, Ser. No. 37,655
Int. Cl. A47g 1/16
U.S. Cl. 248—475 **15 Claims**

In this floor to ceiling wall mirror fastening the removable mirror retaining part has a horizontal elongated flange portion

adapted to be entered in an elongated horizontal sleeve portion that extends outwardly from the edge of the attaching plate fastened to the wall, and a lug projecting from one end of the aforesaid flange has pivotal connection with one end of the sleeve in a slot provided therein, the other end of the flange having integral therewith a generally C-shaped spring catch in the horizontal plane thereof which can be pressed home in the sleeve for snap-in engagement of a projection on this catch in



a keeper slot provided in that end of the sleeve, the projection being cammed out of the way until the projection arrives adjacent the slot when it snaps into place therein. A portion of the spring catch is exposed at the end of the sleeve so that a pin or the like can be used in depressing the spring catch enough to release it, and there is sufficient deflection of the mirror retaining part outwardly as the part is pressed home in fastening the mirror, so that this part springs outwardly as soon as the catch is released.

3,680,823

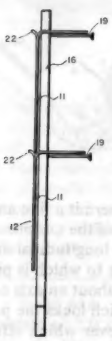
FORM FOR CONCRETE FLAT WORK

Earl H. Lougheed, 530 Osceola St., Denver, Colo.

Filed April 14, 1969, Ser. No. 815,695

Int. Cl. E01c 7/00

U.S. Cl. 249—3 **1 Claim**



A concrete flat work form system for facilitating the placement of floors, sidewalks, patios and the like in which the form element is bent or rolled from sheet material to an angle shape and further providing spaced holes for the reception of cooperatively shaped and drilled support stakes. The sheet material is cut adjacent the stake holes providing a tab at the form face for mating engagement of a similarly derived form element disposed in stacked arrangement above the first form element. The tab is positioned for non-interference with concrete finishing tools.

3,680,824

APPARATUS FOR MANUFACTURE OF CONCRETE BUILDINGS

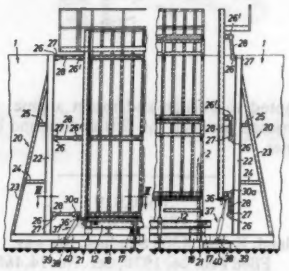
Lorenz Kesting, 32 Amtsstrasse, 46 Dortmund-Wellinghofen, Germany

Filed Oct. 22, 1969, Ser. No. 868,467

Claims priority, application Germany, Nov. 15, 1968, P 18 08 989.9

Int. Cl. B28b 7/22

U.S. Cl. 249—13 **1 Claim**



Apparatus for the manufacture of buildings of reinforced concrete open on one side, in particular of prefabricated ferroconcrete garages, comprising an outer and inner mould each consisting of several parts and for use below floor or ground level, and having a frame with which the building is vertically movable, wherein the outer mould scaffolding by means of guide links and movable by drive means operative in the plane of the guide links.

3,680,825

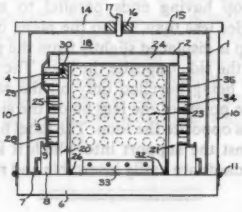
FIXTURE FOR USE IN THE FOAM INSULATION OF REFRIGERATOR CABINETS

Robert A. Wachter, Louisville, Ky., assignor to General Electric Company

Filed Dec. 4, 1970, Ser. No. 95,024

Int. Cl. B22d 19/00

U.S. Cl. 249—83 **5 Claims**



A fixture for supporting the walls of the shell and liner components of a refrigerator cabinet during the foam insulation thereof includes a movable wall supporting member comprising a base plate and a plurality of removable and interchangeable elements secured to the base plate and adapted to collectively form a wall supporting surface conforming to the shape of the supported wall.

3,680,826

PANEL FORM WITH FLEXIBLE CAP HOLDING ACCESS BOX IN SEALING RELATIONSHIP

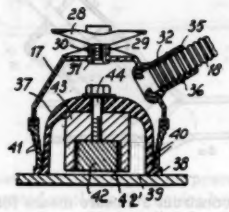
Ermanno Bassani, Corso di Porta Vittoria, 9, Milan, Italy

Filed Jan. 24, 1966, Ser. No. 522,539

Claims priority, application Italy, Jan. 25, 1965, 614 A/65; April 12, 1965, 3423 A/65; Jan. 4, 1966, 13070 A/66The portion of the term of this patent subsequent to Feb. 1, 1988, has been disclaimed.

Int. Cl. B28b *23/00*

U.S. Cl. 249—91 10 Claims



A skeleton structure to be embedded in a prefabricated panel of concrete so that electrical wires can subsequently be installed in the panel. A hollow access box having an open side is positioned in the form in which the panel is to be poured so that the open side faces the peripheral wall of the form in close proximity thereto. At least one hollow conduit is also positioned in the form and communicates with the interior of the access box. A cap shaped sealing member of resiliently flexible material is securable to the peripheral wall of the frame and extends sealingly into the open side of the hollow access box to prevent intrusion of the liquid concrete into the interior of the access box as well as to maintain the latter in predetermined position relative to the peripheral wall of the form during hardening of the concrete.

3,680,827

RINGS OF HEAT INSULATING MATERIAL FOR USE WITH FLOATING HEAD BOXES IN INGOT CASTING

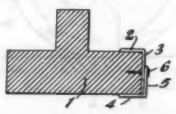
Paul Gilger Rausch, Cleveland, Ohio, assignor to Foseco Trading A.G., Chur, Switzerland

Filed Feb. 3, 1970, Ser. No. 8,326

Claims priority, application Great Britain, Feb. 8, 1969, 5,840/69

Int. Cl. B22d *7/10*

U.S. Cl. 249—202 3 Claims



Insulating rings for use with floating head boxes in ingot casting are reinforced by a partial outer casing of sheet metal.

3,680,828

MOLD FOR CONGEALABLE COMESTIBLES

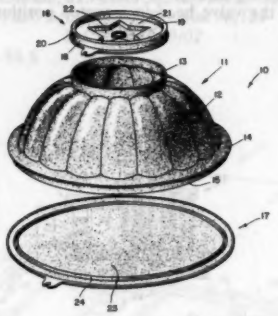
James B. Swett, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.

Continuation of Ser. No. 697,259, Dec. 12, 1967, abandoned, which is a continuation of Ser. No. 443,223, March 29, 1965, abandoned. This application March 5, 1970, Ser. No. 17,009

Int. Cl. B28b *7/34*

U.S. Cl. 249—134 8 Claims

A reusable mold for food stuffs and the like of the type that are introduced in the mold as a moldable material and formed therein to a molded shape retaining solid tightly conforming to the contours of the mold, said mold being fabricated from



plastic materials and being provided with a means of facilitating removal of the solidified products forming part of the mold enclosure.

3,680,829

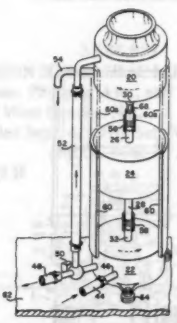
COMBINED DISHWASHER AND GARBAGE GRINDER ARRANGEMENT

Robert A. McCoy, Turtle Creek, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 8, 1971, Ser. No. 113,234

Int. Cl. B02c *18/42*

U.S. Cl. 241—46 B 5 Claims



The arrangement provides a dishwasher vat of a height approximating that height of the base cabinets of a kitchen, with the pump for the dishwasher being located to the side of the vat and being driven by a motor which also drives a garbage grinder mechanism, and in which coupling means is provided so that when the motor is driven in one direction it drives only the garbage grinder, while when driven in the other direction it drives only the dishwasher pump.

3,680,830

EVACUATION VALVE

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Burton W. Roney, 34 Lakeside Ave., Wayne, N.J.

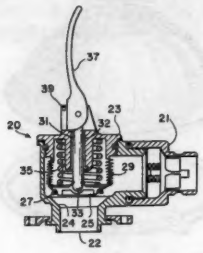
Filed Jan. 5, 1971, Ser. No. 104,047

Int. Cl. F16k *25/00*

U.S. Cl. 251—86 1 Claim

A packless valve for use with an evacuation chamber and having a quick reaction, single-throw, open-closed control and

a quick-connect adapter for attachment to a vacuum line and a vacuum pump. A bellows connecting the valve head to the valve casing seals off the seating mechanism from any connect with fluid flowing through the valve. The bellows and a spring act to hold the valve head in a seated position. A ball and



socket joint connects the valve stem to the valve head. The valve head is free to swivel as it is seated producing an automatic valve alinement and a better valve seal. An O-ring fitted in a groove in the valve head also serves to seal the valve head in the seat. A two-position cam lever moves the valve stem through a self-lubricating bushing to open and close the valve.

3,680,831

ELECTRICALLY DRIVEN VALVE APPARATUS

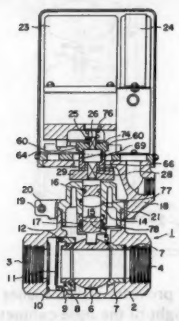
Katsuji Fujiwara, 191 Nishitani, Hiraoka-cho, Kakogawa-shi, Hyogo-ken, Japan

Filed May 21, 1970, Ser. No. 39,442

Claims priority, application Japan, June 7, 1969, 44/44829; Sept. 20, 1969, 44/74525; Sept. 20, 1969, 44/75063; Oct. 11, 1969, 44/81410

Int. Cl. F16k *31/04*

U.S. Cl. 251—134 **3 Claims**



For use in a fluid flow system, a ball valve having two operative positions, namely the open and the closed positions, is operated by an electric motor which is under the control of an electric control circuit. This control circuit comprises a control switching means capable of taking two different states, at one of which the motor is energized to drive the valve toward the open position. The motor is de-energized by positioning switch means which is changed over to open the current supply path to the motor, when the valve reaches the open position. At the same time with this changing-over of the positioning switch means, another current supply path to the motor is previously provided, which path can thereafter be closed by setting the control switching means to the other state, to thereby rotate the valve to the closed position. In this manner, the opening and the closing operations of the valve can selectively be controlled merely by changing over the control switching means.

3,680,832

CLOSURE DEVICE FOR STREAMING MEDIA, IN PARTICULAR HIGH PRESSURE LIQUIDS

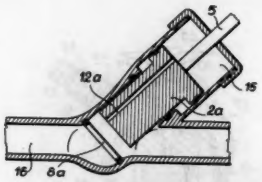
Sandor Uliczky, Budapest, Hungary, assignor to Nikex Nehezipari Kulkereskedelmi Vallalat, Budapest, Hungary

Filed March 16, 1970, Ser. No. 19,866

Claims priority, application Hungary, March 20, 1969, UI-140

Int. Cl. F16k *39/04*

U.S. Cl. 251—282 **3 Claims**



It is known to construct a closure means for high pressure fluids in such a way that the forces acting on it compensate each other. According to the invention such a closure means is improved in such a way that it can be removed from the path of the closure means, in order to allow a free streaming of the fluid. For this purpose the closure means is either moved in the interior of the casing, or it surrounds the casing like a sleeve.

3,680,833

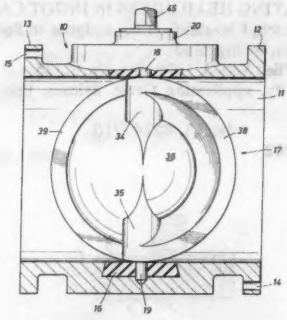
VALVE

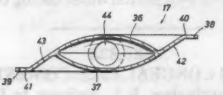
Branch M. McNeely, Jr., Bellaire, Tex., assignor to Keystone Valve Corp.

Filed Sept. 15, 1970, Ser. No. 72,304

Int. Cl. F16k *39/00*

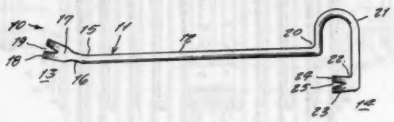
U.S. Cl. 251—283 **2 Claims**





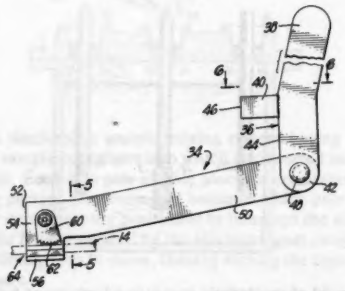
A valve of the butterfly type wherein the valve closure means has a pair of symmetrically disposed vanes having peripheral edges which lie in non-coincident planes eccentrically disposed to the axis of rotation passing through the hub of the valve closure means.

3,680,834
PRY BAR AND NAIL PULLER
Wilbur Holloway, 345 Davis Ave., Mt. Ephraim, N.J.
Filed Nov. 16, 1970, Ser. No. 89,709
Int. Cl. B25c *11/00*; B66f *15/00*
U.S. Cl. 254—25 2 Claims



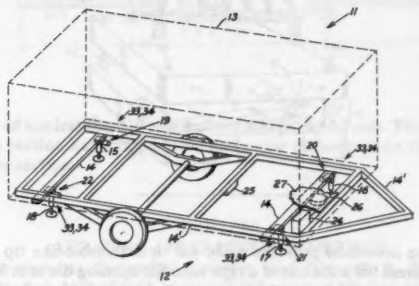
A bar and nail puller for prying purposes, the device comprising an elongated steel bar, the device being hook shaped at one end, the opposite end being slightly angled and the tip of each of the ends being forked so to form a nail puller.

3,680,835
TIE ROD PULLER
Arthur W. Rose, 3917 Pamela Road, Chino, Calif.
Filed Nov. 23, 1970, Ser. No. 91,689
Int. Cl. E21b *19/00*
U.S. Cl. 254—29 R 2 Claims



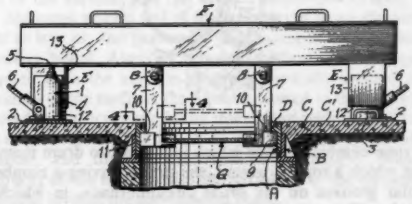
A tool for exerting a pulling force on a tie rod extending between opposing walls of a concrete form to draw the walls into contact with wall spacing shoulders on the tie rod. The tie rod puller has a lever with a handle at one end and a transverse fulcrum projecting beyond opposite sides of the lever between its handle and other end, and a puller arm pivoted on the other lever end and having tie rod gripping means at its free end. In use, the puller arm is inserted between the reinforcing timbers or so-called "whalers" of one form wall to a position of gripping engagement with the tie rod wherein the lever fulcrum engages the whalers at the sides of the lever and a force is exerted on the lever handle in a direction to exert a pulling force on the tie rod and thereby draw the form walls toward one another into contact with the tie rod spacing shoulders.

3,680,836
AUTOMATIC ORIENTATION SYSTEM
Joseph A. Amelotte, 46 Amble Road, Chemlsford, Mass., and William B. Costain, 613 Main St., Newbury, Mass.
Filed Oct. 7, 1970, Ser. No. 78,781
Int. Cl. B60s *9/02*
U.S. Cl. 254—86 R 18 Claims



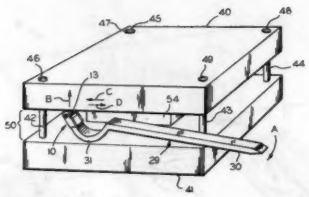
Disclosed is an automatic orientation system for structures. Utilized in the system is an electrical control circuit which selectively operates the proper lift device in response to predetermined signals from an orientation sensor. Provided is an override circuit permitting orientation at various heights, and a storage circuit to move the lift devices out of position when not in use.

3,680,837
PRECISION HYDRAULIC LIFTING DEVICE
Ralph M. Cestone, Prospect Ave., and Vincent Cestone, Ridge Road, both of West Orange, N.J.
Filed Sept. 4, 1970, Ser. No. 69,628
Int. Cl. B66f *7/12*
U.S. Cl. 254—89 H 10 Claims



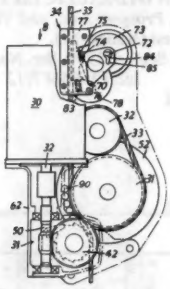
A lifting device adapted to the precise vertical translation and control of various objects, includes jacks to be located at opposite sides of the object to be raised and each to support one end of a load-carrying bar which has lifting arms each pivotally connected at one end to said bar and formed at its other end with fingers to engage the object at opposite sides of the object to be raised and each to support one end of a load-carrying bar which has lifting arms each pivotally connected at one end to said bar and formed at its other end with fingers to engage the object at opposite sides thereof, and a spreader bar to positively spread said arms apart and rigidly hold said fingers in lifting engagement with said object.

3,680,838
DIE BAR OR DIE BAR ATTACHMENT
Lynn D. Dunn, 1320 Peachtree Lane, Mount Prospect, Ill.
Filed May 8, 1970, Ser. No. 35,851
Int. Cl. B66f 3/00
U.S. Cl. 254—131 9 Claims



The invention provides a die bar or a thimble-like tip attachment for a die bar of a type used for opening die sets. The die bar or attachment includes a roller (preferably nylon, or the equivalent) which enables the tool to roll along the die set.

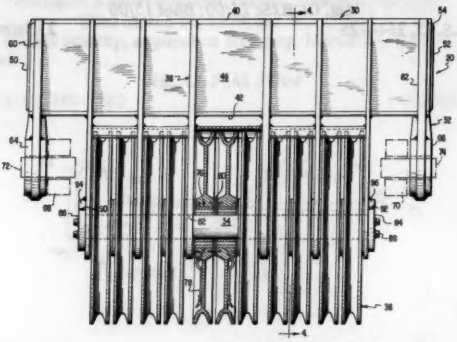
3,680,839
ROPE CLIMBING DEVICES
Frederick Mattinson, Andover, England, assignor to Martin-Thomas Limited, Hampshire, England
Filed July 10, 1970, Ser. No. 53,933
Claims priority, application Great Britain, July 21, 1969, 36,477/69
Int. Cl. B66d 1/76
U.S. Cl. 254—175.7 2 Claims



A rope climbing device which includes two drum members about which a rope is wound, the drums having a number of circular grooves on the drum circumference, in which the rope sits. The axes of the drums are tilted through such an angle relative to each other that one end of a groove on one drum, viewed radially, overlaps a groove of the other drum and at the other end overlaps the next adjacent groove of the other drum.

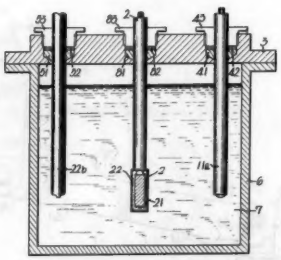
3,680,840
BOOM SHEAVE ASSEMBLY
David J. Pech, Manitowoc, Wis., assignor to Manitowoc Engineering Company, Manitowoc, Wis.
Filed Dec. 30, 1969, Ser. No. 889,188
Int. Cl. B66d 1/36
U.S. Cl. 254—192 4 Claims

A boom sheave assembly is provided wherein a sheave shaft is supported by a plurality of struts which are loaded substantially only in tension. The boom sheave assembly is pivotally



mounted to position a beam, strong in bending, in alignment with the direction of the forces applied to a load implement.

3,680,841
LIQUID CHARACTERISTIC MEASURING INSTRUMENT
Eiichi Yagi; Kenko Kojima; Hisayuki Ikeda; Shiro Yauchi; Tsutomu Shimizu; Tokutaro Tamate, and Hiroyuki Ikegawa, all of Tokyo, Japan, assignors to Kabushikaisha Yokogawa Denki Susakusho (Yokogawa Electric Works, Ltd.), Tokyo, Japan
Filed June 23, 1970, Ser. No. 48,992
Claims priority, application Japan, Oct. 23, 1969, 44/100947
Int. Cl. B01f 11/02; G01n 29/00
U.S. Cl. 259—1 R 4 Claims

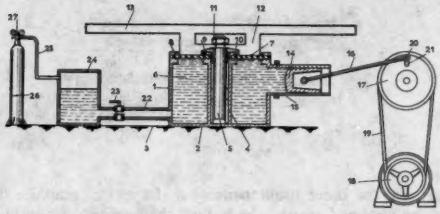


A liquid characteristic measuring instrument having a container enclosing a liquid to be measured, an ultrasonic vibrator, and means for transmitting ultrasonic waves from the vibrator to the liquid in the container, in which precipitation of scale of the liquid being measured is prevented by the ultrasonic waves to ensure accurate measurement.

3,680,842
VARIABLE AMPLITUDE VIBRATOR, FOR EXAMPLE FOR THE MANUFACTURE OF MOULDED CONCRETE PRODUCTS
Virginio Sironi, Milan, Italy, assignor to Vibratechniques S.A., Paris, France
Filed Nov. 24, 1970, Ser. No. 92,478
Claims priority, application France, Nov. 24, 1969, 6940324
Int. Cl. B01f 11/00
U.S. Cl. 259—1 7 Claims

A vibrator, e.g., for the manufacture of moulded concrete products, comprises a support for a mass to be vibrated, and

means for vibrating the support, said means including a chamber adapted to contain a liquid through which in operation vibrations are transmitted to the support, a further chamber adapted to contain liquid under pressure and an adjustable flow restrictor connecting the first-mentioned chamber with the further chamber.



3,680,843

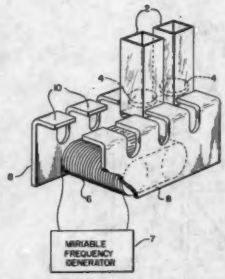
MAGNETIC MIXER FOR DISCRETE SAMPLE SYSTEMS

Maoyeh Lu, Fullerton, and Nico J. Van Slooten, Chino, both of Calif., assignors to Beckman Instruments, Inc.

Filed June 18, 1970, Ser. No. 47,537

Int. Cl. B01f *13/08, 7/00*

U.S. Cl. 259—64 **1 Claim**



There is disclosed a sample mixing system having a multiplicity of sample containers into which are inserted magnetic stirring rods. Each of a pair of pole pieces is connected to an alternating current electromagnet between which pole pieces the sample containers are positioned to intercept the alternating magnetic field generated by the electromagnet causing the magnetic stirring rods to move, thereby stirring the contents of the containers.

3,680,844

SINGLE WORM EXTRUDER

Hans G. L. Menges, Laurensberg by Aachen; Josef P. Lehnen, Verlautenheide by Aachen, and Englebert G. Harms, Laurensberg by Aachen, all of Germany, assignors to Uniroyal Englebert Deutschland AG, Aachen, Germany

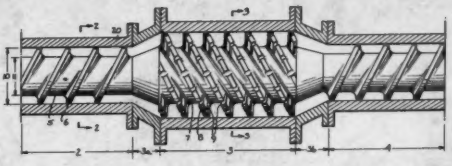
Filed July 16, 1970, Ser. No. 55,542

Claims priority, application Germany, July 16, 1969, P 19 36 418.2

Int. Cl. B29f *3/01*

U.S. Cl. 259—191 **8 Claims**

A single worm extruder for the mixing and processing of rubber is disclosed. The worm consists of two sections, an intake section and a mixing section. The mixing section has lands countercurrent to those of the intake section for partially back-feeding the rubber on to the intake section to provide a turbulent current of material. The countercurrent lands are interrupted by gaps which collectively have the same total area as the cross-sectional area of the intake section. The gaps in the mixing section are of constant width and have a diameter of not less than 10 mm and not more than 12 mm. The mixing section has a larger core and outer diameter than the intake section.



3,680,845

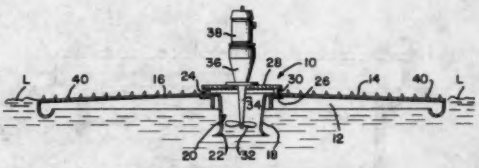
AERATING APPARATUS AND METHOD

Lawrence A. Carlsmith, Amherst, and Kenneth E. Hartz, Nashua, both of N.H., assignors to Improved Machinery Inc., Nashua, N.H.

Filed July 27, 1970, Ser. No. 58,528

Int. Cl. B01f *3/04*

U.S. Cl. 261—37 **12 Claims**



Aerating apparatus comprising a floating support carrying a wall having an upwardly facing surface provided with depressions, protrusions, screens or other means for promoting and accelerating the aeration of liquid flowing thereacross. A discharge nozzle is located generally centrally of the surface for supplying liquid at the elevation of the thereadjacent portion of the surface; and the surface slopes downwardly from the discharge nozzle and at its periphery is at an elevation at least as low as, and preferably at, the upper level of the surrounding liquid. Also, an aerating method wherein liquid is supplied onto the surface generally centrally thereof at the elevation of the surface, the liquid is caused to flow outwardly across the surface while being intermixed with air and turbulence is caused in the liquid to promote and accelerate its aeration, and the aerated liquid is discharged from the periphery of the surface with the periphery at the elevation of the upper level of the surrounding liquid.

3,680,846

STAGED CARBURETOR

James T. Bickhaus, St. Louis County, and Harold A. Carlson, Brentwood County, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

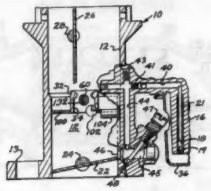
Continuation of Ser. No. 751,397, Aug. 9, 1968, abandoned. This application Jan. 8, 1971, Ser. No. 105,083

Int. Cl. F02m *9/10*

U.S. Cl. 261—51 **6 Claims**

A carburetor having the usual throttle valve is also equipped with a butterfly valve surrounding the main fuel boost venturi (venturi valve). The venturi valve is linked to the throttle valve in such a manner as to begin opening movement shortly

after the throttle valve begins to open. Air velocity over the main fuel nozzle approaches a maximum as the venturi valve



begins to open and remains substantially constant thereafter to promote most efficient mixing of fuel and air.

3,680,847

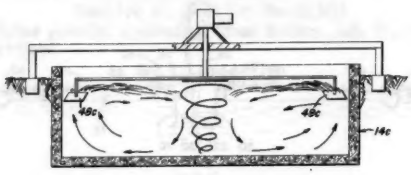
METHOD OF AND APPARATUS FOR AERATING WATER

James F. Grutsch, Hammond; Russell C. Mallatt, Crown Point, and Robert G. Mowers, Griffith, all of Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Aug. 31, 1970, Ser. No. 68,461

Int. Cl. B01f *3/04*

U.S. Cl. 261—91 **9 Claims**



Disclosed is a highly efficient method of and apparatus for transferring atmospheric oxygen to water by aerating a body of water at or near its edges to generate in the water's upper stratum converging currents which move toward the central section of the body of water. Conventional pumping, brush-type or turbine-type aerators can be used, but for best results a novel apparatus of our design is used. Preferably, the converging currents are directed slightly off-center so that a whirlpool is formed at this section. Alternatively, a contaminated body of water can be aerated at a region about midway between the central section of the body of water and the periphery of the body of water to generate in the water's upper stratum some converging currents which move toward the central section of the body of water and some diverging currents which move toward the periphery of the body of water.

3,680,848

INTERNAL IDLER DRUM

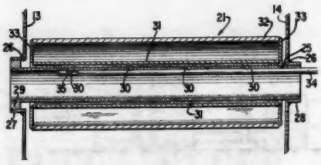
Steven A. Elkow, Lagrange Park, Ill., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed Feb. 18, 1971, Ser. No. 116,305

Int. Cl. F27b *9/30*

U.S. Cl. 263—6 C **7 Claims**

An idler drum has concentric inner and outer tubular members connected at their ends by annular side plates. An inner tubular member is rotatably mounted upon a hollow shaft having its ends welded within openings in fixed mounting plates of the muffle. A lubricaTion pipe is attached to the inner wall of the hollow shaft and has openings therein connected to openings in the peripheral wall of the shaft through which a lubricant is introduced into the clearance between the hollow



shaft and the inner tubular member. Layers of graphite tape may be wrapped around the hollow shaft prior to assembly to retain the lubricant.

3,680,849

CHARGING DEVICE FOR A BLAST FURNACE

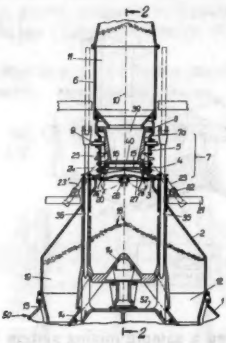
Pieter Hendrik Nieboer, Kapellen d. Moers, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany

Filed May 28, 1970, Ser. No. 41,408

Claims priority, application Germany, Sept. 17, 1969, P 19 46 900.2

Int. Cl. F27b *11/12*

U.S. Cl. 266—27 **8 Claims**



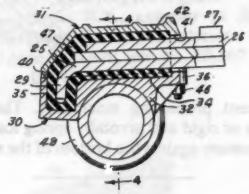
A charging device for blast furnaces includes a storage bin or a lock chamber which is adapted to have a top inlet opening which may be sealed prior to the opening of the lower discharge end to expose the chamber to the pressure of the operating furnace. The lower end of the storage bin is connected through an intermediate sealing ring to the top of a furnace which is to be charged at a location over a distributor bell arranged within the furnace. The intermediate ring portion provides means for mounting a swivel hopper which may be shifted for the purpose of guiding the material into a distributor flow from the storage bin into the chamber of the furnace located above the distributor bell. The lower end of the swivel hopper is closed by one or more plate members which may be moved between an opened and a closed position and the lower end of the intermediate chamber is further sealed in a gas tight manner by a pivotal valve member. The valve member includes a lever which is pivotally supported within an offset portion of the furnace chamber and the valve member with the lever may be pivoted in an opened position to a location at which it is offset from the lower opening of the intermediate chamber in order to permit the material which is dropped from the hopper when it is open to flow downwardly into the furnace without engaging any of the valve parts.

3,680,850

VEHICLE SPRING CONNECTOR

L. V. Preddy, Jr., Dallas, Tex., assignor to Dye Trucking Company, Dallas, Tex.

Filed Aug. 19, 1970, Ser. No. 65,062
Int. Cl. F16f 1/30
U.S. Cl. 267—54 9 Claims



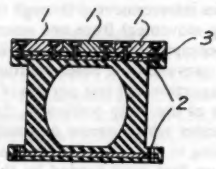
A connector for attaching tandem vehicle axles to the ends of leaf suspension springs which support the vehicle frame through a trunnion shaft supported centrally of the spring. The ends of the master leaf of the leaf spring assembly are downturned to define transverse lips. The connector includes a housing, mounted on the axle, made up of two superimposed sections defining an elongated L-shaped cavity to accommodate and retain the end portion of the spring assembly including the transverse lip of the master leaf. The end portion of the spring assembly is enclosed in a resilient boot accommodated within the L-shaped recess, whereby the spring is resiliently supported within the recess and retained by means of the lip.

3,680,851

FENDER WITH CUSHION BOARD

Sadaharu Takada, Odawara City, Japan, assignor to Seibu Gomu Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed July 22, 1970, Ser. No. 57,192
Int. Cl. F16f 1/37
U.S. Cl. 267—140 1 Claim



The present invention relates to a fender having an impact-bearing surface directly or indirectly fitted with a cushion board composed of a top layer of a high softening point material or a low frictional coefficient material and a relatively hard or hard foamed layer located beneath said top layer. The cushion board according to this invention is intended for protection of the side of a ship which comes into contact with the fender and of the impact-bearing part of a fender to which this board is attached.

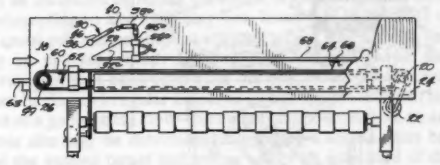
3,680,852

FOLDER CONSTRUCTION

Eduard F. Kamberg, Deerfield, Ill., assignor to Chicago Dryer Company, Chicago, Ill.

Filed April 24, 1970, Ser. No. 31,539
Int. Cl. B65h 45/16, 45/12
U.S. Cl. 270—62 2 Claims

A folder has two folding stations for quarter folding a sheet or the like. The first folding station employs two independently operable clamping sections which secure the leading edge of the sheet in place against a stationary inclined support surface. The sections and support surface are located above a



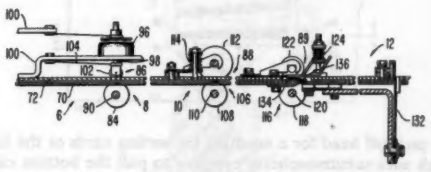
conveyer which carries the remainder of the sheet beneath such leading edge in the course of effecting a first transverse fold.

3,680,853

RECORD CARD READER, FEEDER AND TRANSPORT DEVICE

Frank A. Houghton, Detroit, and Thomas N. Yesowich, Farmington, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 1, 1970, Ser. No. 94,093
Int. Cl. B65h 5/06, 9/04
U.S. Cl. 271—3 3 Claims



A record card reader, feeder and transport is provided in which three, progressively disposed orthogonal, coplanar card paths are defined, each having card feeding and driving means, the feeding means of one being a plunger roller overlying and actuatable toward a drive roller peripherally recessed below the card path.

3,680,854

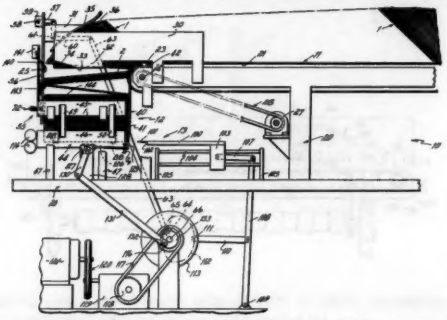
METHOD AND APPARATUS FOR FEEDING FLAT BLANKS TO MAKE BOXES

William C. Daily, and Fred H. Welzel, both of Covington, Ky., assignors to R. A. Jones & Co., Inc., Covington, Ky.

Filed Aug. 27, 1970, Ser. No. 67,490
Int. Cl. B65h 3/08, 5/16
U.S. Cl. 271—32 14 Claims

Apparatus for feeding blanks, particularly pre-slotted, double-face corrugated blanks, the apparatus having an elongated horizontal conveyor having a discharge end overlying a vertical magazine, said magazine for intermittently advancing

blanks in a vertical attitude on said conveyor, causing them to fall to a horizontal attitude at the upper end of said magazine



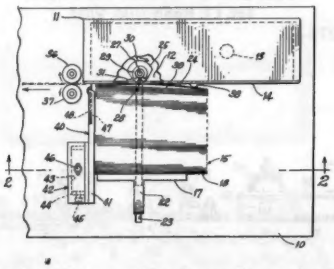
where their descent is temporarily arrested and thereupon permitting them to drop into said magazine.

3,680,855

PICK-OFF HEAD FOR SORTING MACHINE

Robert G. Brown; John R. Sorrells, and Joseph E. Trent, all of Washington, D.C., assignors to B. H. Bunn Company, Chicago, Ill.

Filed June 29, 1970, Ser. No. 50,418
Int. Cl. B65h 1/06
U.S. Cl. 271—41 5 Claims



A pick-off head for a machine for sorting cards or the like which uses subatmospheric pressure to pull the bottom card from its adjacent card to effect a separation of the two cards, and a mechanical thickness gauging device to insure singular lateral movement of the bottom card relative to its adjacent card. The bottom card is distorted by the subatmospheric pressure to remove its central region from contact with the adjacent card, but if static or other conditions prevent such separation, the thickness gauging device physically bars the second card from moving with the first.

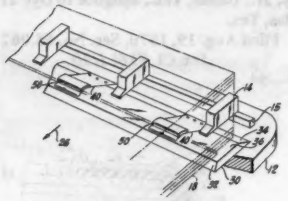
3,680,856

SPRING FEEDER PLATE

James P. Haas, Baltimore, Md., assignor to Koppers Company Inc.

Filed Dec. 31, 1970, Ser. No. 103,168
Int. Cl. B65h 3/24
U.S. Cl. 271—44 R 2 Claims

An improved spring feeder for sheet feeders of the reciprocating bottom-feed type arranged to extend from a conventional spring feeder bar toward adjacent processing machinery rather than away from such machinery resulting in a more positive engagement with the sheet during the feed stroke. The spring feeder includes a plate mountable to a feeder bar reciprocating beneath a stack of sheets. The plate has a first end attached to the bar and a second end inclined upwardly toward the bottom of the stack. The second end includes a lip portion secured to the plate for engaging successive bottom sheets of the stack and for pushing the sheets



toward adjacent processing machinery. The plate may be either flexible or rigid and pivotally spring loaded to maintain an upward pressure against the bottom of the stack.

3,680,857

ROCKING TOY

Gene Bonvicini, Rte. 1, Morehouse Road, Fairfield, Conn., and James Caserta, 353 South Ave., New Canaan, Conn.

Filed June 2, 1970, Ser. No. 42,635
Int. Cl. A63g 17/00
U.S. Cl. 272—52 1 Claim

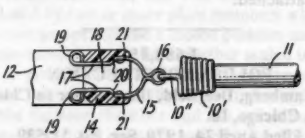
A rocking toy which cannot be overturned by rocking provides exercise and training in coordination as well as amusement. The legs of the body portion are mounted on two spaced rocker assemblies interconnected through the body portion to transmit rocking movement from one assembly to the other. Each assembly comprises cross members limiting its rocking movement and preventing it from overturning by engaging against the front portion and rear portion of the respective leg. The connection of the body portion to the front rocker assembly is off center which causes automatic rocking in one direction. Rocking in the other direction is done by the rider pressing down on foot rests carried by the front rocker assembly.

3,680,858

ELASTIC PULL TYPE EXERCISING DEVICE

Robert J. Ossenkop, Rochelle Park, and Alfred L. Wilson, Maywood, both of N.J., assignors to AMF Incorporated

Filed Sept. 9, 1970, Ser. No. 70,825
Int. Cl. A63b 21/00
U.S. Cl. 272—83 R 1 Claim



In a chest pull type exerciser the tension cords or bands are individually removably connected to their opposite handles by

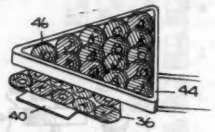
generally U-shaped spring clips which have an integral closed ring or loop at their bite portions to retain the clips to loop on the cable ends after the clips are disconnected from the handles.

3,680,859

COMBINED BILLIARD BALLS RACK AND INDICATOR FOR PLACING THE BALLS

John R. English, Mastic, N.Y., assignor to Joseph R. Di Benedetto, Jr., Bethpage, N.Y., a part interest

Filed June 29, 1970, Ser. No. 50,507
Int. Cl. A63d *15/00*
U.S. Cl. 272—22 **8 Claims**



A game combining elements of the games of billiards and of cards. A plurality of billiard balls bearing designations of playing cards are racked in a predetermined pattern on a standard billiard table through the aid of a billiard ball locator or indicator. The indicator is shaped in the general outline of a billiard ball rack and has a plurality of billiard ball markers with indicia corresponding to the billiard ball to be positioned on the marker. In addition, the indicator is flat with a pull tab at its periphery and is reversible with a different pattern of markers on each of its surfaces.

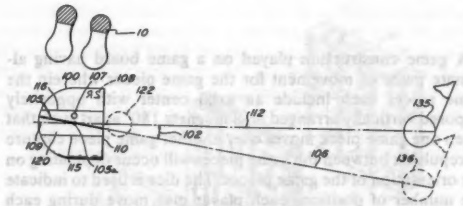
In a preferred form of game, 15 billiard balls are provided comprising three differently colored sets or suits of five bakls each bearing representations respectively of the ten, jack, queen, king and ace. The billiard balls are racked in a predetermined pattern on a billiard table through the aid of a rack and of an indicator which bears indicia of each of the fifteen balls arranged in a predetermined pattern. Each player in turn then attempts to pocket five balls to obtain as high a poker hand as possible, the highest hand winning the game.

3,680,860

METHOD OF FITTING GOLFER WITH PUTTER AND IMPROVING PUTTING ACCURACY

Vance V. Elkins, Jr., 42 Hampton Drive, Freehold, N.J.

Filed June 25, 1971, Ser. No. 156,904
Int. Cl. A63b *69/36, 53/00, 53/04*
U.S. Cl. 273—32 R **12 Claims**



When putting a golf ball with a putter having aiming indicia on the upper surface of the club head, a golfer may fail to accurately aim said indicia along a straight line path to a predetermined putting target because of an inherent sighting error which is personal to each individual golfer. The extent of the sighting error is not the same for all individuals and it may be either to the left or to the right of the putting target, thereby causing the individual to miss a high percentage of putts. When an individual's inherent sighting error is measured and the individual's putting club is provided with a properly inclined sighting error correction line, the individual may thereafter aim the personalized correction line at a desired target while executing a putting stroke and, thereby, incidentally cause the striking face of the putting club to be properly maintained. An individual's inherent sighting error may be measured by noting the extent of the individual's error in attempting to aim a sighting line, located in the vicinity of the usual golf ball position, at a distant target. The sighting line may be provided either on a reversible motor-driven disc operated by foot-controlled push buttons, on a piece of cardboard having an irregular shape, or on the upper surface of the head of a golf putting club. The extent of deviation from an accurate aim may be determined by placing a scaled chart behind the putting target and noting where an extension of the aimed sight line meets the chart. The sight line may be extended to the chart in various ways which include stretching a length of string along the sight line to the chart, by using apparatus which reflects a beam of light from a mirror to the chart, or by moving behind the aimed sighting line and looking along its length to see where on the chart it is aimed. When a golf putting club has been personalized for a particular sighting error, the nature and extent of that error may be indicated on the club by suitable markings provided either on the end of the club handle or on the sole of the club head

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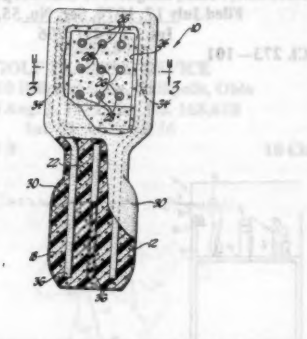
3,680,861

FOOTBALL BLOCKING DEVICE

Joseph P. Schmidt, 4364 Barchester Drive, Bloomfield Hills, Mich.

Filed Oct. 5, 1970, Ser. No. 78,072
Int. Cl. A63b *67/00*
U.S. Cl. 273—55 R **16 Claims**



A football blocking device comprising a resilient core of organic polymeric material having front and rear faces with a recess in the front face thereof. A plastic bag surrounds the core and is stretched tautly over the recess. The core includes a plurality of exhaust passages extending from the bottom of the recess to the rear face and has handles for holding and moving the blocking device. Additionally, plastic reinforcing tubes are completely embedded within and filled with the organic polymeric material of the core.

3,680,862

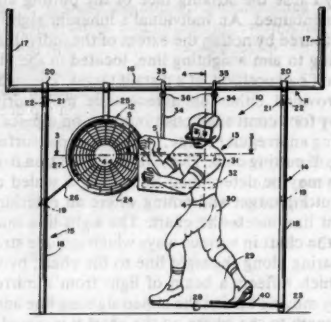
FOOTBALL GAME TARGET

George D. Russell, 101 Golfview Lane, and Samuel E. Smith, 40 Ocean Crest Drive, both of Ormond Beach, Fla.

Filed Oct. 23, 1970, Ser. No. 83,418
Int. Cl. A63b *67/00*
U.S. Cl. 273—55 R **8 Claims**

A multiple target for use in the play of a simulated football game, utilizing a conventional football. The target includes a goal post over which the football can be kicked; a passing target through which the football can be thrown, and a silhouette

target, representing a football player, at which the football is center snapped, for accomplishing various plays to be executed in the play of the game, as well as to afford the player or players practice in kicking, passing and center snapping the football.



3,680,863

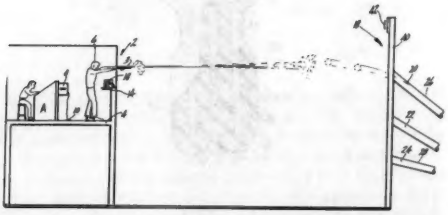
TARGET SHOOTING APPARATUS

Baird Wallace, Grosselle, Mich., and Philip E. Smith, Jr., Gleasondale, Mass., assignors to Olin Corporation

Filed July 17, 1970, Ser. No. 55,721

Int. Cl. F41j 5/06

U.S. Cl. 273—101 **12 Claims**



Apparatus for a shooting game wherein targets are launched from a launching station toward a shooter. Launching conditions can be varied and are selected in a manner hidden from the shooter. A timer is actuated when a target is launched and deactuated when the shooter fires at the target with the shooter being awarded a score which is inversely proportional to the time lapse between launch and firing. No score is awarded if the target is not hit by the shooter.

3,680,864

SPINNING TOP AND TARGET GAME

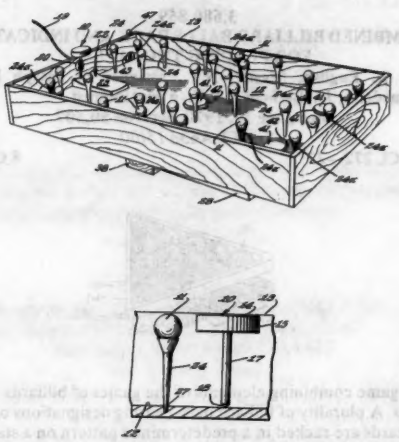
Leslie D. Peterson, Sioux Falls, S. Dak., assignor to Raven Industries, Inc., Sioux Falls, S. Dak.

Filed April 21, 1970, Ser. No. 30,407

Int. Cl. A63f 9/16

U.S. Cl. 273—110 **4 Claims**

A game in which a spinning top may contact targets supported at top head height such as on pedestals. Movements of the spinning top may be controlled relative to the targets by various means including a runway from a spinning station, obstacles in the playing field, and maneuvering the top over the playing field as by having the playing field tiltably movable.



3,680,865

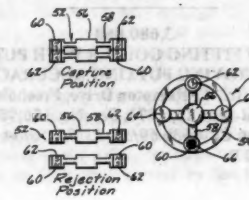
GAME BOARD WITH MAGNETIC GAME PIECES

Grover M. Davis, 502 Second Ave., Audubon, Iowa

Filed March 9, 1970, Ser. No. 17,541

Int. Cl. A63f 3/02

U.S. Cl. 273—134 AE **10 Claims**

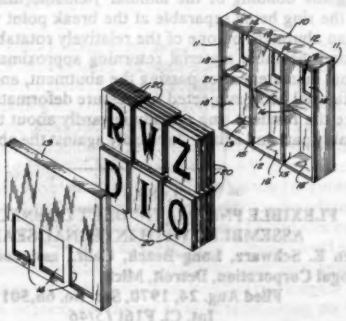


A game construction played on a game board having alternate paths of movement for the game pieces wherein the game pieces each include an axial center with oppositely disposed vertically arranged N–S magnets 180° apart such that when one game piece moves over another game piece capture or repulsion between the game pieces will occur depending on the orientation of the game pieces. The dice is used to indicate the number of positions each player may move during each turn and the player may turn his game piece a quarter or a half of a turn as a part of his move to give him proper orientation to capture his oppnent's game piece. The game pieces may be of any shape and may have visual identification means to indicate magnet orientation and location. The game may be played on game boards of a variety of designs including a checkers type board or a space station board wherein a center earth launching station is provided for a starting point for the game pieces in moving along launching paths intersecting orbital paths about the earth starting station.

3,680,866
DOMINO-LIKE GAME PIECES
Edward L. Kerr, 1143 Brunner Ave., Dallas, Tex.
Filed Sept. 28, 1970, Ser. No. 75,863
Int. Cl. A63f *9/20*
U.S. Cl. 273—137 D 7 Claims

A game set including a plurality of rectangular game pieces each having a face divided into guadrants. One pair of diagonally opposite quadrants of all of the game pieces are of a first color while the other pair of diagonally opposite quadrants on each game piece are of a second color. Some of the quadrants are blank while others are provided with spot markings ranging from one to six. The combination of the blank and number-marked quadrants on the game pieces is varied so that all game pieces are different. Two special embodiments of the game set are disclosed for use by blind players. In one embodiment, diagonally opposite quadrants of each game piece have matching surface finishes detectable by sense of feel which are different from similar matching surface finishes on the other pair of diagonally opposite quadrants of each game piece. In the other embodiment, a first diagonally opposite pair of game piece quadrants on each piece is at a first surface elevation while the other diagonally opposite pair of quadrant surface portions on each piece is at a different surface elevation from the first pair of quadrant surface portions so that a blind player can detect the difference between opposite pairs by feel.

3,680,867
FLIP OVER GAME
Roger W. Zimmerman, R.R. 6, West Bend, Wis.
Filed April 22, 1970, Ser. No. 30,687
Int. Cl. A63f *1/00*
U.S. Cl. 273—138 R 7 Claims



A container has pairs of cells, filled with flat plates bearing indicia and provided with windows to expose the indicia. Each pair of cells is constructed so that rotating the container 180° causes a plate to cross from one cell of a pair to the other. The indicia on the series of plates in each pair of cells are thus displayed in sequence. Adjacent pairs of cells contain differing numbers of plates to provide extremely large numbers of combinations for game playing, the number being so large as to be essentially random within any limited number of turns of the device about its horizontal axis.

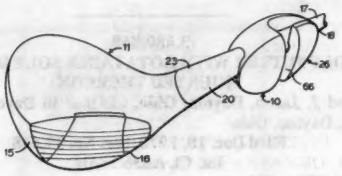
3,680,868
GOLF PUTTER WITH ROTATABLE SOLE DEVICE MOUNTED THEREON
Richard J. Jacob, Dayton, Ohio, assignor to Dayco Corporation, Dayton, Ohio
Filed Dec. 18, 1970, Ser. No. 99,445
Int. Cl. A63b *53/04*
U.S. Cl. 273—174 5 Claims

A golf putter with at least one rotatable spherical device mounted in the bottom of the putting head to reduce friction between the head and the putting surface during the putting stroke. A variation of the putter permits the device to be removed from the club and replaced by another one having different characteristics.

3,680,869
GOLF TRAINING DEVICE
Joseph P. Brady, 10 Hillcrest Lane, Gallipolis, Ohio
Filed Aug. 3, 1971, Ser. No. 168,618
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 B 10 Claims

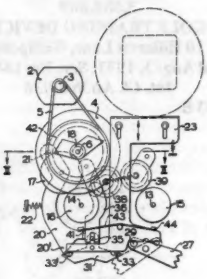
A golf training device or aid for golfers designed to develop proper swing and to overcome sway, comprising a flexible cord with a strap for attaching one end of the cord to the wrist of the golfer, a strap for attaching the cord to the corresponding leg of the golfer, a clamp for adjusting the length of the cord to suit the golfer, and interlocked strips of a product sold under the trademark "Velcro" fixed to the cord at intermediate, longitudinally spaced points along the cord and, which, when pulled apart, produce an audible signal upon incorrect arm and body movements of the golfer.

3,680,870
WEIGHT ATTACHMENT FOR GOLF CLUBS
Ernest G. Burnett, N. 188 Post, Spokane, Wash., and Charles S. Cates, W. 4004 Winston Drive, Spokane, Wash., assignors to said Burnett, by said Cates
Filed July 8, 1971, Ser. No. 160,784
Int. Cl. A63b 69/36
U.S. Cl. 273—194 R 6 Claims



A weighting attachment is described for removably attaching to a golf club. The attachment has a mass with a bore formed therethrough and an access slot formed therein in open communication with the bore and angularly evolving therefrom to provide an entrance opening in the mass that is transverse to the bore.

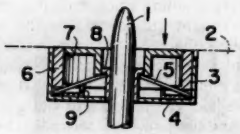
3,680,871
CASSETTE TAPE RECORDER
Manfred Paul Tupaj, Grobenzell, and Heinz Engert, Munich, both of Germany, assignors to Sud-Atlas-Werke G.m.b.H., Munich, Germany
Filed Oct. 26, 1970, Ser. No. 83,755
Claims priority, application Germany, March 3, 1970, P 20 09 822.0
Int. Cl. G11b 5/10
U.S. Cl. 274—4 D 11 Claims



In a tape recorder containing a pivotally mounted pressure roller cooperable with a driven main spindle for drawing magnetic tape past magnetic heads for recording, playback and erasing operations, an actuating slider movably supports both the magnetic heads and means for pivoting the pressure roller for effecting their displacement in accordance with the operation to be performed by the tape recorder. A rocker switch and a setting member are each arranged to be set in different positions and to cooperate with the actuating slider for displacing the slider as required.

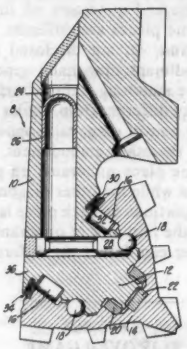
3,680,872
EMBEDDED ADAPTER FOR TURNTABLE
Takayuki Hiraki, Tokohama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Dec. 2, 1970, Ser. No. 94,521
Claims priority, application Japan, Dec. 9, 1969, 44/116340
Int. Cl. G11b 3/60
U.S. Cl. 274—39 B 3 Claims

An adapter for a doughnut type phonograph record disc which is embedded in a recess of the turntable when an ordinary LP record is to be played, comprises a supporting plate having an upwardly rising annular ridge forming a fulcrum, an annular toggle spring plate placed on said supporting plate, a cylindrical body serving as the adapter and having its lower edge abutting with the upper surface of the spring plate along an outer circumferential position, and a depressing plate



located inwardly of said cylindrical body and having its lower edge abutting with the upper surface of the spring plate along an inner circumferential position, all of these members being included inside of a recessed portion of the turntable, whereby when the depressing plate is pushed downwardly, said cylindrical body rises up to engage the central hole of the doughnut type record.

3,680,873
AXIALLY AND ROTATIONALLY LOCKED BEARING SEAL
Lloyd L. Garner, Los Alamitos, Calif., assignor to Smith International, Inc., Newport Beach, Calif.
Filed July 6, 1970, Ser. No. 52,554
Int. Cl. F16j 9/00, 15/34
U.S. Cl. 277—9 8 Claims



A seal for use between relatively rotatable parts including an inner annular ring, preferably metallic, and an outer annular element of yieldable seal material, the inner resilient ring having a weakened break point which will remain unbroken during the bonding of the annular yieldable material to the ring, the ring being separable at the break point when forced over an abutment on one of the relatively rotatable parts, the ring and yieldable material returning approximately to their original diameters after passing the abutment, and the yieldable material being subjected to pressure deformation to tightly secure the resilient ring radially inwardly about the relatively rotatably part and axially outwardly against the abutment.

3,680,874
FLEXIBLE PNEUMATIC DUCT CONNECTORS ASSEMBLED WITH INTERNAL SEALS
Steven E. Schwarz, Long Beach, Calif., assignor to Federal-Mogul Corporation, Detroit, Mich.
Filed Aug. 24, 1970, Ser. No. 66,501
Int. Cl. F16j 15/46
U.S. Cl. 277—153 9 Claims

A pair of duct ends are received within opposite ends of a larger diameter housing, each end of the housing being formed

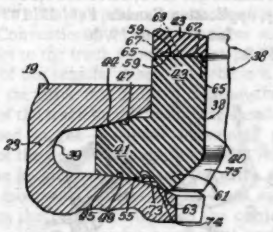
with an internal circumferential seal seat groove defined, in part, by an endless radially disposed flange. A continuous radial clearance gap is defined between the outside of each duct end and the radially inner edge of the corresponding flange to accommodate angulation of the duct end. An annular seal assembly is matingly mounted within each of the seal grooves of the housing in a radially compressed preload condition on the outside of the corresponding duct end, the seal assemblies serving to flexibly mount the housing on the two duct ends while preserving the radial clearance gap. Each seal assembly comprises an annular jacket of generally C-shaped radial section enclosing an endless garter spring that biases radially inner and outer walls of the jacket into static sealing contact with the duct end and the housing interior, in the preload condition. The jacket is made of a lubricant impregnated synthetic plastic that is relatively stiff, rather than resilient, having some flexibility, and adapted to withstand high temperatures, that is formed with an annular internal hinge groove so oriented with respect to the flange of the corresponding seal seat groove as to be reinforced thereby, enhancing flexibility of the jacket walls within a wide range of angulation of the duct end relative to the housing. Each of the duct ends mounts a positioning clip, the pair of clips normally limiting axial shifting of the housing to a range preventing disengagement from either of the tube ends, the clips being selectively displaceable to allow sufficient shifting of the housing to give access to the interior thereof for seal inspection and replacement.

3,680,875

AIR BRAKE HOSE COUPLER GASKET

Vaughn T. Hawthorne, 5223 Deerfield Road, Mechanicsburg, Pa.

Filed Sept. 18, 1970, Ser. No. 73,441
Int. Cl. F16l *17/06*
U.S. Cl. 277—171 **4 Claims**



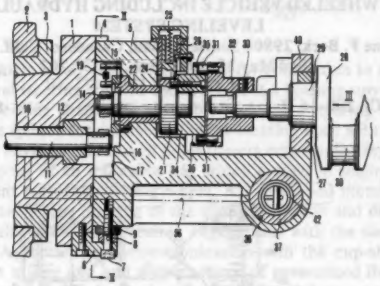
An improved gasket is provided for hose couplers, such as may be used in the air brake line of a railroad car. The gasket fits within a conventional hose coupler and seals with the coupler and also seals with another such gasket, or a conventional gasket, in a connected coupler. The gasket includes an annular outer portion which seals with and fits within a groove in the coupler, an annular outer axially extending inner portion having a mating surface which seals with a similar portion of a gasket in the connected coupler, and an annular lip which engages with the coupler to positively seal the annular portion of the gasket against the coupler. The gaskets are dimensioned to insure effective sealing at the mating surfaces which have rounded corners to prevent tearing of the gasket during coupling and uncoupling and are contoured to permit deformation or flattening so as to provide a seal across the full contact surface between the gaskets.

3,680,876

INDEXING DEVICE FOR A CRANKSHAFT

Hiroshi Okada, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Dec. 17, 1970, Ser. No. 99,021
Claims priority, application Japan, Feb. 26, 1970, 45/16487
Int. Cl. B23b *31/36*
U.S. Cl. 279—5 **4 Claims**



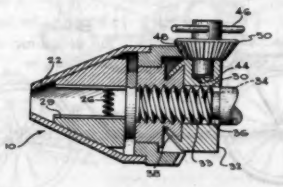
An indexing device for a crankshaft comprises a chuck body radially adjustably mounted on a drive spindle for varying crankshaft eccentricities, an index plate carries a first gear and the spindle carries a second gear, these gears being brought into an operative relationship by an interposed idler gear carried on a movable member adapted to be moved by manual operation so as to move the idler gear out of meshing engagement when the index plate is moved in accordance with a different eccentricity of a crankshaft.

3,680,877

CHUCK FOR DRILL OR LIKE

Reynold Happe, Jefferson City, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

Filed July 10, 1970, Ser. No. 53,941
Int. Cl. B23b *31/12*
U.S. Cl. 279—62 **3 Claims**

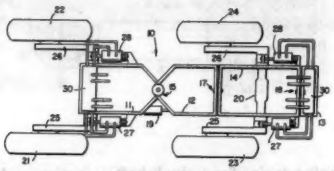


A chuck for removably holding a drill bit or like tool element, including a conical sleeve and a plurality of jaws biased apart and away from the tool element against the inner sleeve face by compression springs, the sleeve being threaded onto a

spindle and a thrust disc between the spindle and jaws operable upon sleeve rotation to shift the jaws axially of the sleeve to either tighten the jaws against or release the tool element, and a collar keyed to the spindle but movable axially along the spindle and journaled to the sleeve and having a socket for rotatably receiving a lock key which in turn has teeth that cooperates with teeth on the adjacent sleeve end operable to rotate the sleeve relative to the spindle.

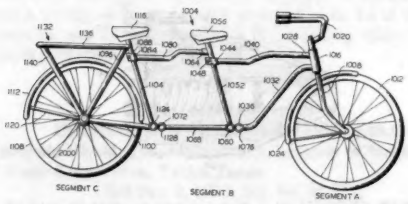
In the tool art, a chuck frequently is used to releasably secure a drill bit or like tool element coaxially centered relative to a rotating spindle. In many instances, the cost of the chuck comprises a major portion of the total cost of the tool, particularly for example in a hand powered or low cost small electric drill. There are basically two types of chucks, one type having a key for mechanically tightening and loosening the chuck jaws relative to the tool element and the other type being only hand tightened. The key type chuck firmly holds the tool element and can be easily and quickly operated, but does have a relatively high cost. The hand tightened chuck is more economical than the key type chuck, but its tool element holding power and easiness of operation are not nearly as good.

3,680,878
WHEELED VEHICLE INCLUDING HYDRAULIC LEVELING SYSTEM
Eugene F. Beck, 29800 Seaview Road, Cazadero, Calif.
Filed May 15, 1970, Ser. No. 37,702
Int. Cl. B60g *17/00*
U.S. Cl. 280—6 H **5 Claims**



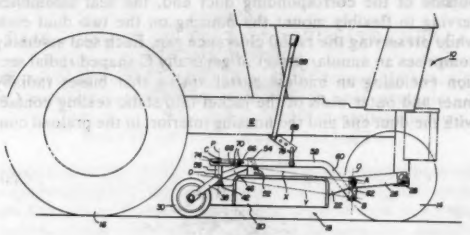
A hydraulic system comprising a pair of hydraulic motors or rams mechanically and hydraulically connected in opposition to each other and control means for simultaneously operating the rams either in tandem or in opposite sense to each other is disclosed. Various embodiments of the control means are described and a wheeled vehicle embodying the hydraulic system is disclosed.

3,680,879
COLLAPSIBLE BICYCLE
Joseph A. Cogliano, 1268 Maple Ave., Baltimore, Md.
Filed July 30, 1970, Ser. No. 59,483
Int. Cl. B62k *13/02*
U.S. Cl. 280—7.16 **13 Claims**



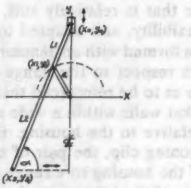
A collapsible bicycle is disclosed which can be made into or converted into various tandem or coupled arrangements by means of interfitting and interchangeable segments.

3,680,880
IMPLEMENT MOUNTING AND LIFT ARRANGEMENT
Andrew Blanuw, Winneconne, Wis., assignor to J. I. Case Company, Racine, Wis.
Filed June 8, 1970, Ser. No. 44,238
Int. Cl. B60s *9/00*
U.S. Cl. 280—43.17 **10 Claims**



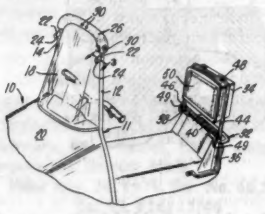
A mounting arrangement for an implement carried by a vehicle underneath the vehicle body, includes a four-point linkage arranged such as to form a parallelogram so as to maintain the implement in a parallel, nominally horizontal, posture at any vertically adjusted position of the implement.

3,680,881
LINKAGE MECHANISM
Kenneth R. Douglas, 3760 Davie Blvd., Fort Lauderdale, Fla.
Filed Dec. 5, 1969, Ser. No. 882,801
Int. Cl. B60g *3/18*
U.S. Cl. 280—96.2 R **1 Claim**



A linkage mechanism coupling a supporting structure and a moveable member for insuring relative linear motion of the moveable member. A controlled arm and a radial lever are so coupled along a center line to the supporting structure and each other that a controlled arm end is restricted to substantially linear motion only for a predetermined segment of its path.

3,680,882
SNOWMOBILE PROTECTIVE DEVICE
Camille Fleury, 198 Rue Adam, Richmond, Quebec, Canada
Filed March 23, 1970, Ser. No. 21,620
Claims priority, application Canada, Feb. 27, 1970, 076,144
Int. Cl. B60r *19/00*
U.S. Cl. 280—150 R **2 Claims**



A safety device for power sleds including a front crash frame projecting upward around the sides of the windshield

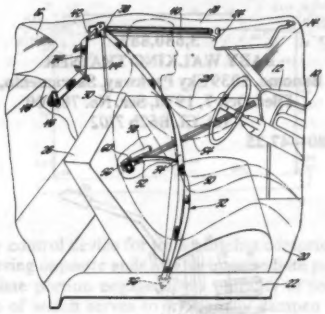
and having a pair of cutters mounted on opposite sides of the vehicle and adjacent the top of the frame, the vehicle further including a back rest mounted on a frame so that it may be moved from an elevated to a lower position and a canopy adapted to extend between the back rest and the top of the front frame member.

3,680,883

VEHICLE PASSIVE OCCUPANT RESTRAINING BELT ARRANGEMENT

Charles M. Keppel, Madison Heights, and Irwin K. Weiss, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1971, Ser. No. 118,605
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 SB **1 Claim**



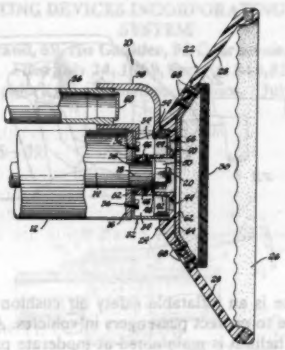
A vehicle passive occupant restraining belt arrangement includes shoulder and lap belts having their first respective ends fixed with respect to the vehicle body inboard of the seat. The other end of the shoulder belt is received by a conventional inertia retractor mounted rearward of the seat adjacent the outboard side of the vehicle body and normally retracting the shoulder belt to a suitable occupant restraining position diagonally disposed across the chest of a seated occupant. The other end of the lap belt is received by a releasable automatic locking retractor mounted on the inboard lower rear portion of the vehicle body door and normally retracting the lap belt to a suitable occupant restraining position disposed across the lap of the seated occupant. An elongated first track member mounted along the roof rail of the vehicle body slidably mounts a first carrier that is apertured to slidably receive an intermediate portion of the shoulder belt. An elongated second track member is angularly disposed on the inboard side of the door with the rear end adjacent the locking retractor and with the front end positioned above the rear end adjacent the front edge of the door. A second carrier is mounted by the second track member for longitudinal movement and is apertured to slidably receive an intermediate portion of the lap belt. Conventional drive mechanisms move the carriers with respect to the track members in response to an operative condition of the vehicle. When the vehicle is in the operative condition, the drive mechanisms position the carriers at the rear ends of the track members and the shoulder and lap belts are disposed in the occupant restraining positions. Upon cessation of the operative condition of the vehicle, a solenoid releases the locking retractor and the drive mechanisms subsequently move the carriers to the front ends of the track members as the belts slide through the carriers and move to easy-enter positions allowing convenient egression of the occupant from the vehicle body. Upon an occupant again assuming a seated position and the vehicle being placed in the operative condition, the drive mechanisms move the carriers to the rear ends of the track members to allow the belts to again assume the occupant restraining positions.

3,680,884

VEHICLE SAFETY ASSEMBLY

Robert L. Stephenson, Sterling Heights, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 21, 1970, Ser. No. 82,562
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **3 Claims**



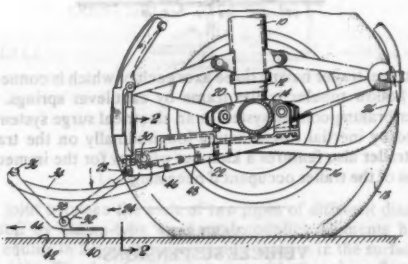
A vehicle safety assembly adapted for connection to a conventional steering column which includes a housing surrounding a steering shaft. The assembly includes a steering wheel which is splined for connection to the steering shaft with a hub portion having a plurality of holes therein communicating with the interior of an inflatable bag which is held in sealing engagement with the steering wheel. A cup-shaped member is connected to the housing of the steering column and defines an annular chamber in sealing engagement with the steering wheel. A conduit is in communication with the cup-shaped member at one end and with a source of pressurized fluid at the other end whereby the bag may be inflated during crash or collision conditions. The system is adapted for connection to conventional steering columns presently utilized in automobiles.

3,680,885

ANTI-HYDROPLANING DEVICE

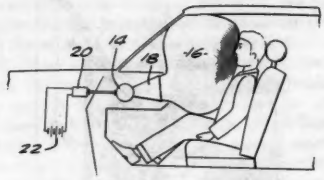
Pedro DeCardi, Lakewood; Carl S. Taylor, Palos Verdes, and Geoffrey L. Roberts, Laguna Hills, all of Calif., assignors to McDonnell Douglas Corporation

Filed May 6, 1971, Ser. No. 140,859
Int. Cl. B60r *27/00*
U.S. Cl. 280—150 R **8 Claims**



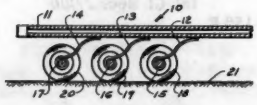
A water displacer such as a plow or scraper in front of the tires of a vehicle to remove water from a flooded surface and expose the tires to a mere wet track condition. An air jet optionally may be used between the positive displacer and the tires.

3,680,886
SAFETY CUSHION AIR SYSTEM
Bernard Mazelsky, West Covina, Calif., assignor to Ara, Inc., West Covina, Calif.
Filed Dec. 16, 1969, Ser. No. 885,601
Int. Cl. B60r 21/10
U.S. Cl. 280—150 AB 11 Claims



The device is an inflatable safety air cushion for use as a safety device to protect passengers in vehicles. A gas such as nitrogen or helium is maintained at moderate pressure in an elongated container. It is transferred to a similarly elongated inflatable bag through an elongated nozzle type diffuser between the container and bag. The diffuser has a throat portion in which is positioned explosive opening or valve means in the form of a relatively thin membrane for opening the passageway to rapidly transfer the gas to the bag for inflating it without damaging the bag. The device, practically and effectively makes possible inflation of the bag in a sufficiently limited number of milliseconds to be fully operative for its purpose.

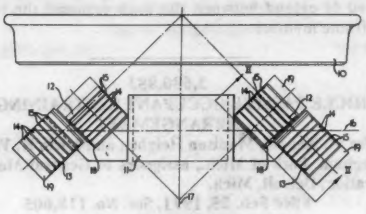
3,680,887
TRAVEL TRAILER
Emerson W. Docker, Ft. Lauderdale, Fla., assignor to Docker Safe Trailers, Inc., Fort Lauderdale, Fla.
Filed Sept. 26, 1969, Ser. No. 861,301
Int. Cl. B60g 9/00
U.S. Cl. 280—124 A 1 Claim



A travel trailer having three axes each of which is connected to a hollow tubular trailer frame by cantilever springs. The trailer braking control system is an electrical surge system actuated by inertial forces acting longitudinally on the trailer. The trailer also features a kick-out window for the immediate egress of the trailer occupant if necessary.

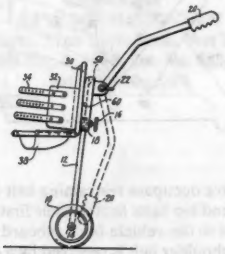
3,680,888
VEHICLE SUSPENSIONS
Archie John Hirst, Leicester, England, assignor to The Dunlop Company, Limited, London, England
Filed July 28, 1970, Ser. No. 58,911
Int. Cl. B60g 11/22
U.S. Cl. 280—124 R 6 Claims

A suspension system for a vehicle in which the spring units each comprise interleaved rubber blocks and metal plates wherein the spring units are arranged to overlap about the longitudinal center line of the axleboxes to form a compact



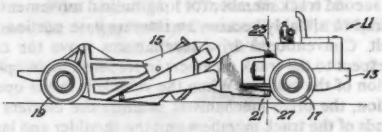
suspension with controlled lateral and vertical stiffness, of which the following is a specification.

3,680,889
BABY WALKING TRAINER
Joseph A. Bonomo, 5039 Sky Parkway, Sacramento, Calif.
Filed Oct. 7, 1970, Ser. No. 78,700
Int. Cl. B62b 7/02
U.S. Cl. 280—47.25 4 Claims



A wheeled frame, a back and harness detachably mounted to the top of the frame, a seat detachably mounted to the back, and a handle pivotally mounted to the top of the frame.

3,680,890
SAFETY LOCK FOR ARTICULATED VEHICLE
Lloyd L. Magown, Sr., and Rex L. Zillman, both of Longview, Tex., assignors to R. G. Le Tourneau Inc., Longview, Tex.
Filed July 13, 1970, Ser. No. 54,394
Int. Cl. B62d 53/00
U.S. Cl. 280—432 5 Claims



As safety lock for locking a pivot connection of an articulated vehicle for servicing, shipment, and the like, characterized by a sector disc means rigidly affixed to one section of the vehicle with engaging means such as notches or protrusions disposed about its periphery; and a lock member pivotally mounted on the other section of the vehicle and pivotal into a normal position out of contact with the sector disc means, into an armed position, and into a locked position. The operator can pivot the lock member into the armed position, where the lock member is in interference with the sector

disc so as to be drawn into the locked position upon further steering in a predetermined direction. The operator may then operate from the operator's console the steering switch to effect the locked position, in which the lock member engages at least one of the engaging means in the sector disc. Also disclosed are specific preferred embodiments in which the lock member is movable in a plane parallel with the plane of the sector disc and has a holding pin for holding its free end in either the normal position or the locked position.

3,680,891

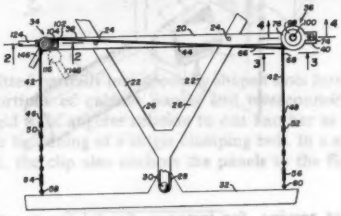
SWAY CONTROL FOR TRAILER HITCH

William L. Rendessy, 1839 E. Moreland, Phoenix, Ariz.

Filed Aug. 8, 1969, Ser. No. 848,602

Int. Cl. B60d *1/00*

U.S. Cl. 280—446 B 5 Claims



A sway control device for trailer hitches comprising a cable means having opposite ends and an intermediate portion; said intermediate portion engaged by a plurality of rotary members, one of which serves to frictionally dampen the movement of said cable; another of said rotary members being movable laterally on its axis to provide for taut or slack condition of said cable for operation of the damping of said cable or the release thereof for hitching and unhitching; opposite end of said cable removably connected to the towing vehicle in laterally spaced relation to the normal hitch of a trailer and a towing vehicle.

3,680,892

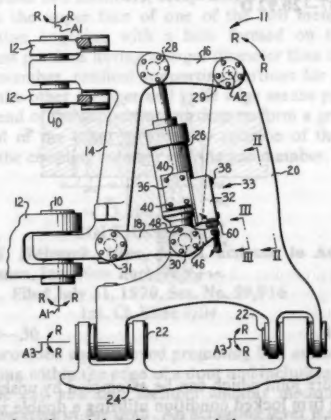
CUSHION HITCH LEVELING VALVE LINKAGE

James A. Olthoff, South Holland; Roger M. Smith, Joliet, and Jack H. Trittipoe, Elwood, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed March 22, 1971, Ser. No. 126,687

Int. Cl. B62d *53/02*; B60d *1/00*

U.S. Cl. 280—489 3 Claims



A linkage has three joints for transmitting arcuate motion in any plane to a control element to push and pull the control element linearly along the longitudinal axis of the control element. One joint is fixed. One joint is pinned. One joint is a ball joint type. The one fixed joint coupled with the fact that the control element is free to rotate allows the linkage to both push and pull in any plane.

3,680,893

CONNECTING DEVICES INCORPORATING A LOCKING SYSTEM

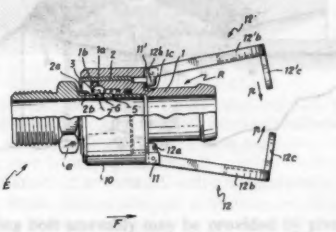
Abel C. Giraud, 69, rue Gaultier, 92 Courbevoie, France

Filed July 24, 1969, Ser. No. 844,529

Claims priority, application France, July 30, 1968, 68161260

Int. Cl. F16l *37/08*

U.S. Cl. 285—39 4 Claims



An auxiliary device for the remote control of an axially lockable connection comprising a lever system whereby movement of at least one accessible long lever arm operates a shorter lever arm to actuate an unlocking element.

3,680,894

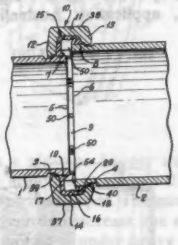
JOINTS BETWEEN PIPES OF DIFFERENT DIAMETERS AND COUPLINGS AND GASKETS FOR THE SAME

John S. Young, Berkeley Heights, N.J., assignor to Victaulic Company of America, South Plainfield, N.J.

Filed Oct. 30, 1970, Ser. No. 85,616

Int. Cl. F16l *17/00*

U.S. Cl. 285—112 19 Claims



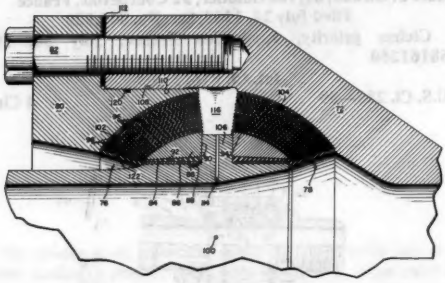
A joint between the ends of two pipes of different diameter formed by clamp-type segmental coupling elements having legs ending in key sections engaging grooves in the surfaces of the pipes. The leg for engagement with the pipe of smaller diameter is longer than the other leg. A pressure responsive gasket seated within the housing has lips engaging the pipe surfaces and has members for preventing the longer of the gasket legs from unseating its lip in response to pressure differential between the interior and exterior of the pipe. An additional rib may be provided for closing the space between the pipe ends.

3,680,895

FLEXIBLE JOINT MEANS

John T. Herbert; Paul E. Sullivan, and Stanley P. Vitt, all of Redlands, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Nov. 24, 1969, Ser. No. 879,206
Int. Cl. F16l 27/04
U.S. Cl. 285—167 9 Claims



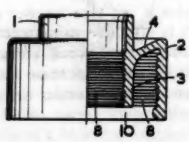
An omnidirectionally flexible joint for fluid conduits subject to high pressures and axial loads. The joint employs a pair of annular flexure and seal assemblies disposed in opposing relationship between an inner and an outer housing. The assembly has a resilient flexure element generally in the shape of a hollow spherical segment which is adapted to be bonded to ball and socket surfaces adjacent the inner and outer housings. The assembly further has a resilient shear element which extends generally in the direction of the longitudinal axis of the joint. This shear element is adapted to yield to axial tensile loads applied to said joint and thereby avoid having such loads transmitted to the flexure element, which might otherwise cause failure of the joint.

3,680,896

TOILET PAN CONNECTOR

George Moffat Cuplt, 77 Crockford St., Port Melbourne, Victoria, Australia

Filed July 22, 1969, Ser. No. 843,596
Claims priority, application Australia, July 30, 1968, 41398/69
Int. Cl. F16l 25/00
U.S. Cl. 285—177 4 Claims



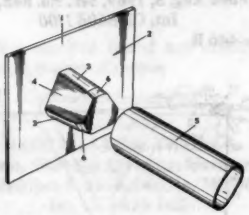
A connector for sealably joining the inlet, outlet or vent opening of a toilet pan to a pipe which includes large and small tubular portions with their axes substantially parallel, each of the tubular portions being adapted to receive a female sealing engagement, one of the components to be connected, and and an integrally formed non-planar diaphragm interconnecting the two tubular portions, the tubular portions and the diaphragm being composed of a resilient material and a diaphragm being sufficiently flexible to accommodate misalignments of the components to be connected.

3,680,897

FORCE-FITTED PIN- AND TUBE JOINT AND A FRAME FOR AN APPARATUS PROVIDED WITH SUCH A JOINT

Theodoor Hillebrand Linthout, Venlo, Netherlands, assignor to Van Der Grinten N.V., Venlo, Netherlands

Filed June 29, 1970, Ser. No. 50,693
Claims priority, application Netherlands, July 7, 1969, 69/10410
Int. Cl. F16b 9/00
U.S. Cl. 287—20 R 8 Claims



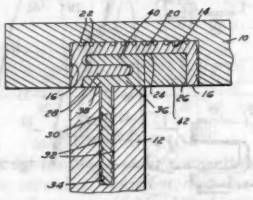
A joint serving, for instance, for joining together frame members of a photocopying apparatus is provided by means of a tube that is substantially circular in cross-section which is force-fitted upon a pin protruding from a structural member such as a frame plate, the pin being tapered to an end portion sufficiently small to enter an end of the tube and having radially retracted outer surface portions alternating with radially protruding conically shaped surface portions so that the tube end when forced upon the pin is elastically deformed and clamped to the contour of the protruding surface portions. Two opposite frame plates of an apparatus may be rigidly connected together by forcing such pins protruding on the frame plates into the opposite ends of a girder tube extending between the plates.

3,680,898

FURNITURE JOINT

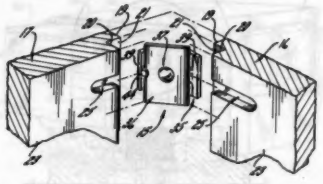
Frederick H. Herrmann, 3015 Lakehaven Court, Ann Arbor, Mich.

Filed May 25, 1970, Ser. No. 40,941
Int. Cl. F16b 5/07
U.S. Cl. 287—20.92 D 6 Claims



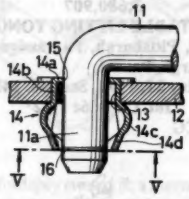
A furniture joint which can be assembled by unskilled persons into a firm locked condition utilizing a double re-entrant groove for lateral insertion and a right angle lateral motion for locking, with provision to block the joint against dis-assembly.

3,680,899
HARDWARE ASSEMBLY FOR CONNECTING PARTS TOGETHER AT RIGHT ANGLES
John I. Newcomer, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Nov. 4, 1970, Ser. No. 86,905
Int. Cl. F16b 5/06
U.S. Cl. 287—20.92 D 7 Claims



A clip is fitted partially into specially shaped slots formed in the edge portions of cabinet panels and interconnects the panels in rigid right angular relation to one another as an incident to the tightening of a single clamping bolt. In a second embodiment, the clip also anchors the panels to the floor of the cabinet.

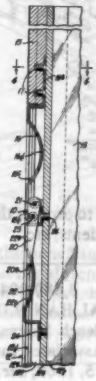
3,680,900
COUPLING MEMBER
Eiichi Kawakami, Hekinan, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi Pref., Japan
Filed April 7, 1971, Ser. No. 131,944
Int. Cl. F16b 17/00
U.S. Cl. 287—93 4 Claims



A coupling member of resilient material adapted for connecting together two members, comprising a head portion engaging with the upper face of one of the two members, a walled portion engaging with a hole formed on the one member, boss portions having a larger diameter than the hole in the one member, resilient supporting portions for holding one end of the other member and knife edge means provided at the free end of the supporting portions to form a groove at the one end of the other member by rotation of the other member or the coupling member and the one member.

3,680,901
BOLT ASSEMBLY
Lawrence F. Biebuyck, Niles, Mich., assignor to American Metal Climax, Inc., New York, N.Y.
Filed July 31, 1970, Ser. No. 59,916
Int. Cl. E05c 9/04
U.S. Cl. 292—36 4 Claims

There is provided an improved projecting bolt assembly for flush mounting within the edge of a door and including a combination stile cap and bolt member slidably mounted in a channel in the edge of the door. An actuating lever is adapted to be pivotally mounted adjacent one of its ends, and a leaf spring is provided having one end rigidly secured to the combination stile cap and bolt member, and having its other end pivotally mounted to the actuated lever intermediate its ends.



A double acting bolt assembly may be provided by pivotally securing the actuating lever to a second bolt member.

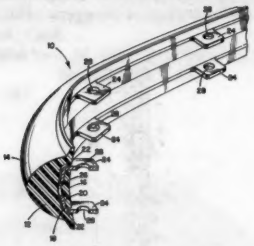
3,680,902
SHIELDED STRIKER FOR A VEHICLE LATCH
Robert E. Slattery, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.
Filed Jan. 4, 1971, Ser. No. 103,426
Int. Cl. E05b 15/02
U.S. Cl. 292—341.14 10 Claims

The striker includes a pin-type keeper shielded by an L-shaped guard which is effective to deflect the clothing from being snagged and torn by the keeper. The guard also supports the outer end of the keeper to increase the resistance of the keeper to bending and breaking under heavy transverse loading.

3,680,903
PROTECTIVE DEVICE
Richard E. Hulten, Dunham, N.H., assignor to McCord Corporation, Detroit, Mich.
Filed Oct. 8, 1970, Ser. No. 79,142
Int. Cl. B60r 19/08
U.S. Cl. 293—71 R 4 Claims

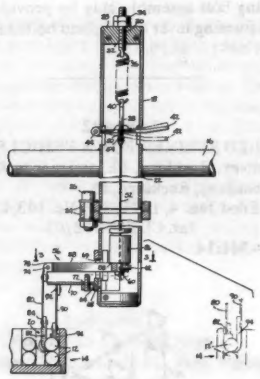
A device which is adapted for ready attachment to the exposed surface of an exterior component, for example an au-

tomobile bumper, fender or the like. In addition to being decorative, the device also functions to absorb energy in the



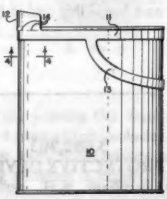
event of an impact, and to protect the surface to which it is attached from scratches, dents, etc.

3,680,904
MATERIAL HANDLING DEVICE
Bryce C. Adie, Palm Beach Shores, Fla., assignor to Atomic Power Development Associates, Inc., Detroit, Mich.
Filed June 5, 1969, Ser. No. 830,631
Int. Cl. B25j *1/00*
U.S. Cl. 294—19 **5 Claims**



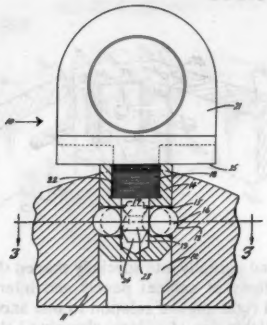
This invention relates to a material handling device having spring means for controlling the gripping force in a pair of fingers, and manual means for releasing said gripping force.

3,680,905
CONTAINER CARRIER AND SPOUT
M. Julius Klygis, Evergreen Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed April 20, 1971, Ser. No. 135,669
Int. Cl. B65d *23/10*
U.S. Cl. 294—31.2 **10 Claims**



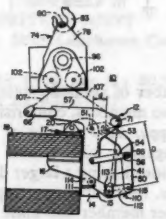
A container carrier comprising an integral handle and integral pouring spout formed from a plastic sheet material of substantially uniform thickness.

3,680,906
REMOVABLE EYE BOLT FOR LIFTING HEAVY OBJECTS
Karl E. Neumeier, Stillwater, Minn., assignor to Programmed & Remote Systems Corporation, St. Paul, Minn.
Filed Oct. 12, 1970, Ser. No. 79,731
Int. Cl. B66c *1/00*
U.S. Cl. 294—89 **6 Claims**



A removable eye bolt assembly for lifting heavy objects and in particular large liner sections for rotating ball or roller mills, wherein the eye bolts must be removed when the liners are in use, and must be inserted very securely when used so that they don't come out. The liner sections being lifted are extremely heavy. The liners are usually cast and the present structure shows a connecting device that is safe and secure even though the mounting openings for the device may be cast in place.

3,680,907
TILTABLE LIFTING TONGS
Robert V. Siegwart, Pittsburgh, Pa., assignor to Heppenstall Company, Pittsburgh, Pa.
Filed May 21, 1971, Ser. No. 145,716
Int. Cl. B66c *1/22*
U.S. Cl. 294—103 CG **5 Claims**

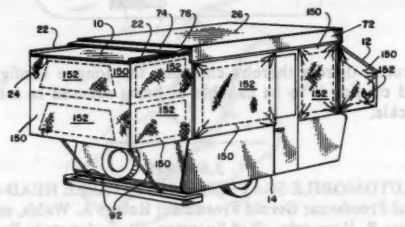


The specification discloses tiltable lifting tongs of the type having opposing grappling jaws for grasping and releasing a load, such as a coil of sheet steel, and having a power driven cable sling for tilting the tongs through an angle, such as 90°, to correspondingly change the orientation of the load between pick-up and set-down thereof. A toggle linkage is employed whereby the load reaction force acting in the cable sling is applied to one of the tong levers controlling the gripping pressure of the grappling jaws in such a manner as to provide an amplification of the forces exerted on the tong lever and also to maintain a substantially constant and near maximum lever arm ratio therefor throughout the entire angle of change in orientation.

3,680,908
CANTILEVERED CAMPING VEHICLE BED CONSTRUCTION

Duane C. Bowen, c/o Construction Trades Center, 2541 State St., Carlsbad, Calif.

Filed Aug. 11, 1970, Ser. No. 62,943
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 R 10 Claims

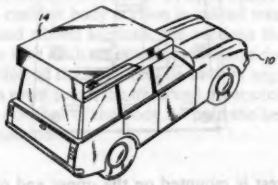


In a camper with flat top, a flat roof panel, pulling out from the top, which is flanged to drain rain outwardly, and covers single or double bunked pull-out cantilevered beds.

3,680,909
TENT CAMPER

Herbert C. Greif, Tucson, Ariz., assignor to Gila River Recreation Industries, Inc., Coolidge, Ariz.

Continuation-in-part of Ser. No. 689,416, Dec. 11, 1967, abandoned. This application Dec. 29, 1969, Ser. No. 888,410
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 6 Claims



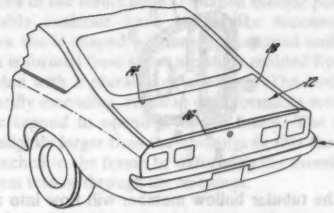
A tent camper foldably stored in a storage unit mounted on the top of a vehicle; the storage unit includes a storage box and a closure member which are slidably and pivotally secured to each other to permit the closure member to pivot and slide relative to the storage box and assume a position horizontal to the ground and close to the ground to expand a tent secured to both the closure member and the storage box. Also disclosed are alternative embodiments of the invention suitable for carrying articles other than tents.

3,680,910
VEHICLE BODY CLOSURE PANEL

Donald Stanner, Lathrup Village, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed April 1, 1971, Ser. No. 130,340
Int. Cl. B62d *25/12*
U.S. Cl. 296—29 8 Claims

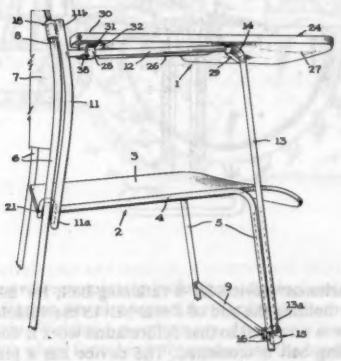
A vehicle body closure panel, such as a deck lid, includes an inner panel and an outer panel having the edge portions thereof hem flanged over the respective edge portions of the inner panel. The inner and outer panels are secured together against relative shifting movement by heat cured adhesive. Spaced edge portions of the inner panel are each provided with a plurality of angularly offset respective tabs which extend laterally of the edge portions and are spaced longitudinally thereof. One group of tabs is located at one distance from the terminus of a respective edge portion, another group is located a different distance, and still another is located a different distance. When the panels are assembled and the hem flanges of the outer panel are bent over the spaced edge portions of the inner panel, the hem flange edges are engageable with tabs of one or more of the aforenoted groups to limit relative shifting movement of the panels before the adhesive is heat cured. Those tabs located under the hem flanges are partially or wholly moved back into registry with the inner panel.



3,680,911
DETACHABLE TABLET ARM ASSEMBLY

Jean Dupuis, Paris, France, assignor to The General Fireproofing Company, Youngstown, Ohio

Filed Sept. 21, 1970, Ser. No. 73,868
Claims priority, application France, Sept. 23, 1969, 6932342
Int. Cl. A47c *9/04*
U.S. Cl. 297—162 8 Claims



A furniture accessory includes a rigid framework having integral connecting means for rapid attachment and removal from the frame of a chair and a tablet arm movable from a use position supported by the framework to a storage or non-use position adjacent the chair side, is joined to the framework at the rear thereof by pivot means and at the front by a slide element.

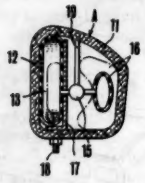
3,680,912
HEAD-REST OF THE SHOCK ABSORBING SYSTEM

Hirotsugu Matsuura, 8-35 Nishino-cho, Tanabe, Higashisumiri-joshi-ku, Osaka, Prefecture, Japan

Filed Sept. 14, 1970, Ser. No. 71,724
Int. Cl. A47c *7/38*
U.S. Cl. 297—391 1 Claim

A head-rest of the shock absorbing system to be fixed to the seat of a vehicle, such as an automobile and the like, a tubular hollow member formed with elastic material, such as rubber, soft synthetic resin and the like, being maintained inside the head-rest, the inside of said tubular hollow member being

filled with fluid, such as liquid, gas and the like, it being so arranged that, only when a shock is applied to the head-rest, the



fluid inside the tubular hollow member will flow into an absorbing hollow member communicating with said tubular hollow member through a resistance tube or a check valve.

3,680,913

ATTACHMENT DEVICE FOR A RETAINING BELT

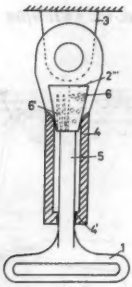
Rolf Seybold, Eichenstrasse 21a, Solingen, Germany

Filed Sept. 3, 1969, Ser. No. 854,865

Claims priority, application Germany, Sept. 6, 1968, P 17 81 199.3; April 22, 1969, P 19 20 264.3; Nov. 8, 1968, P 18 07 823.4

Int. Cl. A62b *35/60*

U.S. Cl. 297—386 **15 Claims**



An attachment device for a retaining belt, for instance a device for holding the end of a seat belt to the vehicle frame. The device is arranged so that deformation work is done when the retaining belt is tensioned. The device has a plastically-deformable body and a tool acting on the body at an angle to the line of action of the tension. When the belt is tensioned, the tool deforms the body and absorbs energy. The effect of static friction between the tool and the body at the beginning of the deformation movement is reduced, for instance by having projections on the body or by coating the surface of the tool or of the body.

3,680,914

MANDATORY THREE POINT SEAT BELT TONGUE SYSTEM

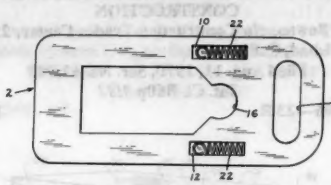
Robert L. Stephenson, Sterling Heights, and Yogi Loomba, Roseville, both of Mich., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,591

Int. Cl. A44b *19/00*

U.S. Cl. 297—389 **6 Claims**

The disclosure describes a vehicle lap belt securing tongue which is inserted into a buckle to connect the separate lap belt sections. The tongue, which is adapted to accept and releasably retain the anchoring end of a shoulder strap for anchoring thereof, is inoperative as a connection between the lap belt sections unless the shoulder strap is inserted and



secured therein thereby changing the tongue configuration and causing it to be capable of being secured in a lap belt buckle.

3,680,915

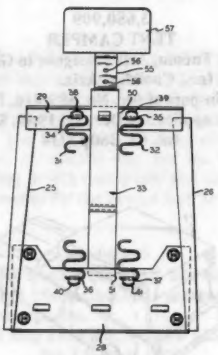
AUTOMOBILE SEAT WITH ADJUSTABLE HEAD-REST

Paul Freedman; Gerald Freedman; Robert A. Wahls, and Harvey R. Hornstein, all of Evanston, Ill., assignors to Freedman Seating Company, Evanston, Ill.

Filed May 18, 1970, Ser. No. 38,139

Int. Cl. A44b *11/00*

U.S. Cl. 297—410 **5 Claims**



A head rest is mounted on the upper end of a telescoping member. One element of this member is welded to a seat back frame in a strong, ladder-like construction. The close fit between the telescoping members provide a stability which enables the use of a simple spring biased detent as an indexing mechanism.

3,680,916

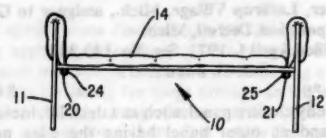
LOUNGE SEATING UNIT AND WEB THEREFOR

Stuart John Gilbert, and Karen T. Gilbert, both of Constantine, Mich., assignors to Harter Corporation, Sturgis, Mich.

Filed April 13, 1970, Ser. No. 27,505

Int. Cl. A47c *7/00, 27/00*

U.S. Cl. 297—440 **4 Claims**



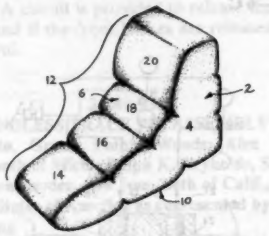
A knock-down type seating unit comprises a pair of spaced, upwardly-extending side panels, a cross-brace detachably secured between said side panels and together with the side panels defining a seating frame. An articulated tufted web is draped over the seating frame.

3,680,917

INFLATABLE BACK AND HEAD FLOOR REST

Carl Robert Harris, 1320 Villa Drive, Louisville, Ky.

Filed May 18, 1970, Ser. No. 38,096
Int. Cl. A47c *27/08, 27/18, 7/02*
U.S. Cl. 297—456 4 Claims



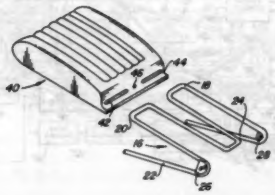
A wedge shaped, inflatable cushion is provided having its body portion divided into ribbed sections defined by transverse ribs. The cushion body portion is quilted transversely to form the ribs and ribbed sections, the sections thus being in communication with each other so that pressure due to weight of a heavy portion of the body on one section urges forward, with the rib as a pivot point, the head and other sections which support lighter portions of the body, to hold the head in a virtually upright position.

3,680,918

AIR CUSHION AND SEAT FRAME

Donald L. Briggs, R.D. 2, Beloit, Ohio

Filed Oct. 26, 1970, Ser. No. 83,846
Int. Cl. A47c *27/08, 27/18;* B60n *1/06*
U.S. Cl. 297—456 5 Claims



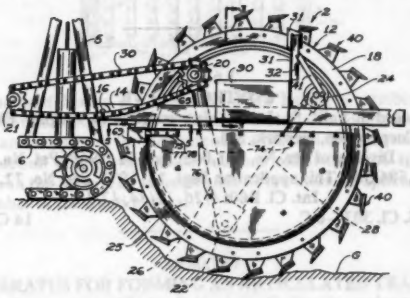
The specification discloses seat structures comprising a lightweight frame having a generally horizontal seat portion and a somewhat vertical back portion. The frame is preferably formed from metal tubing to have an inherent resiliency or spring-action. Attached to the seat and back portions of the frame are inflatable cushion members formed from air impervious sheet material, such as plastic, rubberized fabric or the like. Preferably, the cushions have individual sections which are separately inflatable whereby the contour and firmness of any seat can be varied. In one embodiment, the seat and back portions of the frame have U-shaped tubular portions and the inflatable cushions have pocket-like recesses adapted to receive the U-shaped portions. In a second embodiment, the frame is formed from sheet metal, or molded from plastic and provided with a plurality of openings. The cushions include outwardly extending, resilient or deformable members spaced to correspond to openings in the frame. The members are sized slightly larger than the openings so that the cushions can be attached to the frame by deforming the members and forcing them into or through the openings.

3,680,919

EXCAVATING MACHINE

Melvin K. Rear, Chesterland, and Robert L. Greivell, Chagrin Falls, both of Ohio, assignors to American Hoist and Derrick Company, St. Paul, Minn.

Filed Aug. 24, 1970, Ser. No. 66,226
Int. Cl. E02f *5/08*
U.S. Cl. 299—39 22 Claims



An excavating apparatus including a digging unit having an endless digging wheel adapted for digging in both hard and soft terrain. Weighted members are detachably mounted on the digging wheel for selectively controlling the inertia thereof for digging in hard terrain. A cleaning assembly is mounted on the digging unit for removing spoil adhering to the digging wheel when digging in soft terrain. The cleaning assembly includes a selectively adjustable deflector mechanism adapted for discharging such spoil to one or both sides of the digging unit, as desired. Retaining covers are mounted on the digging unit adjacent the lower end thereof to prevent a build-up of excavated spoil thereon.

3,680,920

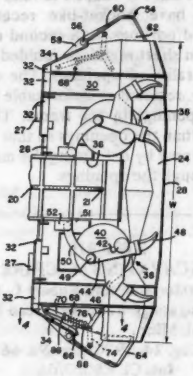
MATERIAL COLLECTING MEANS FOR MINING MACHINES

Michael J. Amoroso, Pittsburgh, Pa., assignor to Lee-Norse Company, Charlerol, Pa.

Filed Oct. 7, 1970, Ser. No. 78,756
Int. Cl. E21c *27/24, 35/20*
U.S. Cl. 299—64 20 Claims

A mining machine in which the main gathering apron is at opposite sides provided with auxiliary gathering aprons pivotally mounted for movement relative to the main gather-

ing apron towards and away from one another. Individual springs resiliently bias the auxiliary gathering aprons from one



another; and individual fluid pressure operated motors are provided for pivotally moving the auxiliary gathering aprons.

3,680,921

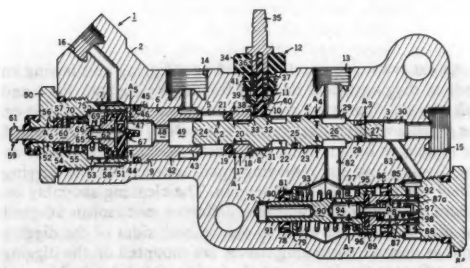
CONTROL VALVE

Edward J. Falk, St. Louis, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Division of Ser. No. 841,045, July 11, 1969, Pat. No. 3,586,384. This application Sept. 15, 1970, Ser. No. 72,342

Int. Cl. B60t *8/26, 11/34, 17/18*

U.S. Cl. 303—6 C **14 Claims**



A driver warning type control valve is provided with a passage connected in by-pass relation with a proportioning valve, and a switch actuating piston for controlling said passage is movable between a normally centered position and opposed translated positions in response to separate fluid pressures supplied thereto and the proportionally reduced fluid pressure from the proportioning valve assisting one of the supplied fluid pressures. A centering piston is subjected to the other of the supplied fluid pressures and engageable with said switch actuating piston to normally urge said switch actuating piston toward its centered position and oppose movement thereof toward one of its opposed translated positions for opening the by-pass passage.

3,680,922

HYDRAULIC BRAKING PRESSURE CONTROL SYSTEM HAVING VALVE RESPONSIBLE TO THE OIL PRESSURE DEVIATION FOR VEHICLES

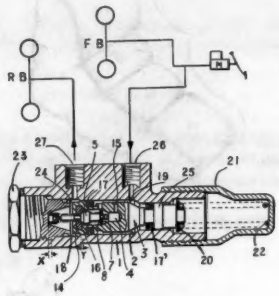
Shinji Kawai, Kariya-shi, Japan, assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Jan. 26, 1970, Ser. No. 5,785

Claims priority, application Japan, Jan. 28, 1969, 44/5710

Int. Cl. B60t *8/26, 11/34*

U.S. Cl. 303—6 C **5 Claims**



The brake control device functions initially in the ordinary manner to first apply the same pressure to the brake cylinders of the front and rear wheels and thereafter to provide a slower rise in pressure to the rear wheel brake cylinders as the pressure on the front brake cylinders increases. Thereafter, there will be no further increase in pressure applied to the rear wheel brake cylinders as further pressure is applied to the front wheel brake cylinders and the brake control device.

3,680,923

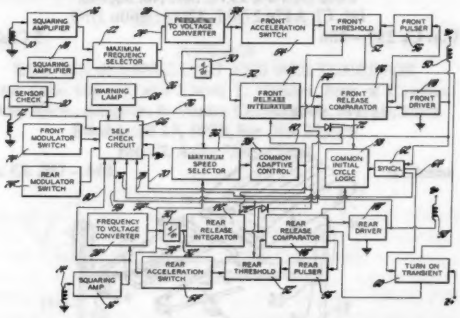
ANTI-LOCK BRAKE CONTROL WITH SENSOR MONITORING CIRCUIT

Philip R. Peterson, Flint; Robert H. Wind, Grand Blanc, and Douglas E. Mark, Davison, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed March 15, 1971, Ser. No. 123,985

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 AF **6 Claims**



A four-wheel anti-lock brake control has at least three wheel speed sensors, each having one side grounded. One sensor for a non-driven wheel is monitored to assure circuit continuity between the sensor and the control circuit. All the sensor outputs are monitored by a self-check circuit to detect any sensor malfunction and to disable the control in the event of a malfunction. The self-check circuit further disables the con-

trol if a substantially zero rear wheel speed is indicated during periods of substantial front wheel speed, thus preventing the occurrence of anti-lock brake cycling in the front wheels when the rear wheels approach a lock-up condition. The self-check circuit further disables the control when any brake modulator is not in its normal position prior to a request by the control for anti-lock operation. In each case, the self-check circuit will disable the control only after some predetermined time delay. Two different time delays are accomplished using a single timing capacitor. A circuit is provided to release the rear brakes briefly when and if the front brakes are released first by the anti-lock control.

3,680,924

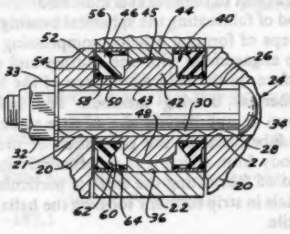
ENDLESS TRACK PIN ASSEMBLY

Robert J. Otto, Grosse Pointe Woods; Alex H. Sinclair, Southfield, both of Mich.; Ralph K. Reynolds, Saratoga, and Robert F. Neargarder, San Jose, both of Calif., assignors to The United States of America as represented by the Secretary of the Army

Filed March 6, 1970, Ser. No. 17,276

Int. Cl. B62d *55/20*

U.S. Cl. 305—11 **5 Claims**



A track pin assembly for an endless track including a plurality of track shoes pivotably connected by hinges including tapered seals protecting a spherical bearing which is mounted on an adjustable diameter track pin. The track pin is rigidly connected to a portion of one track shoe and a portion of the bearing which is secured to the adjacent track shoe.

3,680,925

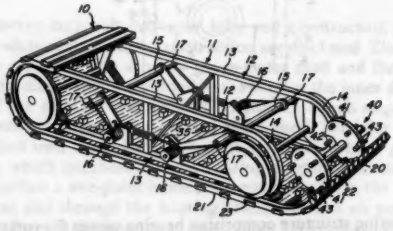
ENDLESS TRACK

Paul L. Spivy, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed April 22, 1971, Ser. No. 136,431

Int. Cl. B62d *55/24*

U.S. Cl. 305—38 **20 Claims**



An endless track having a main body made of a resilient elastomeric material is provided and the track is particularly adapted to be supported by a slide rail system and moved in an endless path thereabout. The track utilizes a plurality of bearing members each slidably interlocked to an associated supporting member fixed to the main body and each bearing member is held by its supporting member to prevent movement transverse a longitudinal axis of the associated supporting member. Protrusion means is provided on the main body and arranged outwardly of each supporting member to normally limit outward sliding movement of each bearing member. The resilient main body of the endless track is adapted to be bent locally adjacent each supporting member to move the protrusion means and enable easy sliding interlocking of an associated bearing member to its supporting member and upon releasing the locally bent portion the resilient character of the main body restores the protrusion means to its normal position to limit outward sliding movement of the associated bearing member and enable normal operation of the track.

3,680,926

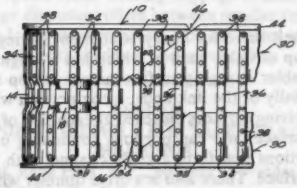
ENDLESS CLEATED TRACK

Robert L. Trapp, Milwaukee, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 750,105, Aug. 5, 1968, abandoned. This application May 8, 1970, Ser. No. 33,162

Int. Cl. B62d *55/24*

U.S. Cl. 305—35 EB **1 Claim**



Disclosed herein is an endless track having a number of belts formed from strips of flexible material having tapered ends and supported for movement in a parallel spaced relation by traction bars having drive sections offset into the space between the belts. The tapered ends of the belts are spliced by a number of the traction bars.

3,680,927

APPARATUS FOR FORMING AN ARTICULATED TRACK

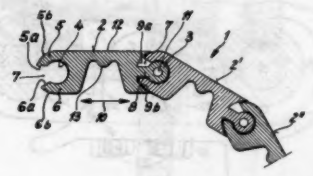
Horst Neureuther, Markt Schwaben, Germany, assignor to Gebr. Hennig GmbH, Ismaning, Germany

Filed April 22, 1971, Ser. No. 136,391

Claims priority, application Germany, April 24, 1970, P 20 20 108.5

Int. Cl. B62d *55/08*; E05d *1/06*

U.S. Cl. 305—35 R **9 Claims**

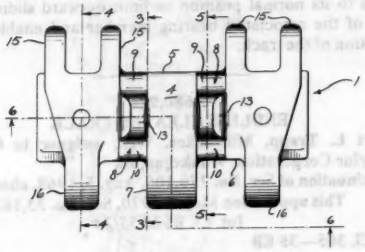


Apparatus for forming an articulated track comprising a plurality of identical members adapted for pivotal connection to one another, each member having at one edge a coupling projection flanked by arcuate recesses and having at the opposite edge a coupling socket formed by arcuate, spaced apart arms. The socket of each member is adapted to accommodate the projection of an adjacent member, and the recesses and arms are so shaped as to permit pivotal movement of the connected members. The spacing between the arms is so related to the depths of the recesses and to the lengths of the arms that pivotal movement of connected members does not withdraw the arms from the recesses.

3,680,928
TREAD BELT DRIVE

Melvin W. Kraschnewski, Racine, and Erwin F. Stoldt, Cudahy, both of Wis., assignors to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed May 8, 1970, Ser. No. 35,843
Int. Cl. B62d 55/20
U.S. Cl. 305—57 12 Claims

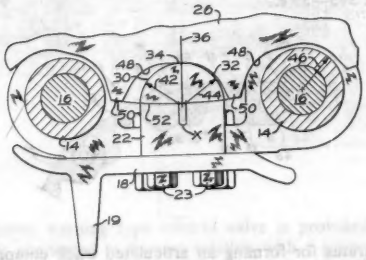


A tread belt drive for heavy equipment having an endless belt made up of links, each of which has a longitudinally extending tumbler engaging surface across its top that is positioned medially of the link ends, a cog portion with fore and aft facing driving surfaces disposed at each side of the tumbler engaging surface, and cap portions continuing upward from the cog portions that form a guide channel with the tumbler engaging surface. There also is a drive tumbler with teeth that mesh with the link cog portions, and the meshing surfaces of the tumbler teeth and link cog portions have contours and are located in such positions that the forces delivered to the links cause the links to follow around the tumbler circumference without losing mesh.

3,680,929
MID-PITCH DRIVE LUG FOR TRACK LINK OF ENDLESS TRACK

Eugene J. Hnilicka, Aurora, and George W. Cackley, Hanna City, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 2, 1970, Ser. No. 69,011
Int. Cl. B62d 55/20
U.S. Cl. 305—57 3 Claims



An endless hinged joint track assembly for use with a vehicle having a notched drive sprocket is provided with link elements having a mid-pitch drive lug located midway between the hinged joints so that only the drive lugs contact the drive sprocket during operation of the vehicle. The mid-pitch drive lug is provided with a drive surface having a specific geometrical configuration to provide proper contact with the drive sprocket.

3,680,930
SPHERICAL BEARING CONSTRUCTION

James R. Campbell, South Laguna, Calif., assignor to Armco Steel Corporation, Middletown, Ohio, a part interest

Filed May 22, 1970, Ser. No. 39,579
Int. Cl. F16c 13/04
U.S. Cl. 308—72 17 Claims

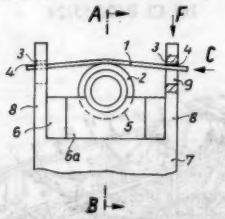
Spherical bearings are provided which include a socket incorporating a spherical race and spherical bearing member which is fabricated from a continuous helix threadably inserted into the spherical race of the socket. The ball and socket construction can be incorporated in such structures as rod end bearings or in any applications where movement of the ball with respect to the socket is indicated.

The method of fabricating the spherical bearing member includes the steps of forming a helix, compressing the coils of the helix into engagement with one another and generating a spherical surface on the exterior surface of the helix to provide the spherical bearing member. The helix may be fabricated from an appropriate size of strip stock or, may be alternatively fabricated by the generation of the helix on a cylindrical body from which it is subsequently stripped. The latter method of fabricating the helix is particularly suitable where materials in strip form for forming the helix are not sufficiently ductile.

3,680,931
SPHERICAL, LAYER-SHAPED SELF-ADJUSTING BEARING FOR SHAFTS

Gottfried Voigt, Nieder-Eschbach, Germany, assignor to Braun A. G., Frankfurt am Main, Germany

Filed June 4, 1971, Ser. No. 150,140
Claims priority, application Germany, June 4, 1970, P 20 27 414.0
Int. Cl. F16c 23/04
U.S. Cl. 308—72 9 Claims



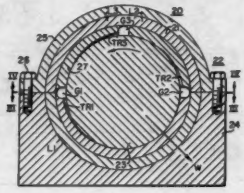
A bearing structure comprising bearing means for rotatably receiving a shaft, a spherical dish and a leaf spring clampingly receiving therebetween the bearing means with the spring in engagement with the bearing means, and a counter-bearing means spaced from the first-mentioned bearing means and in engagement with the spring for supporting the latter, the form of the area of engagement between the spring and at least one of the first-mentioned bearing and counter-bearing means approaching that of a point.

3,680,932

STABLE JOURNAL BEARING

Albert A. Raimondi, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 10, 1970, Ser. No. 71,006
Int. Cl. E16c *17/00*
U.S. Cl. 308—121 9 Claims



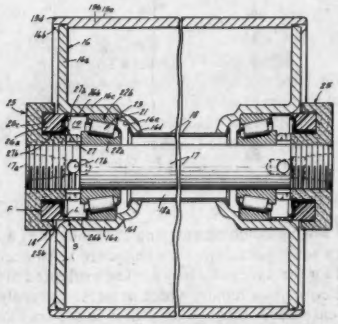
The stability and the load capacity of a journal bearing are improved over conventional non-tilting pad hydrodynamic bearings for supporting the rotating shafts of relatively large machines, such as turbines and generators. The present bearing is considerably cheaper and easier to manufacture than tilting pad journal bearings. The bearing comprises a plurality of tapered segments or lobes which are separated by axial grooves in its inner surface.

3,680,933

IDLER ROLL STRUCTURE WITH IMPROVED BEARING SEAL ASSEMBLY

Donald E. Walker, Yorkville, Ill., assignor to Barber-Greene Company, Aurora, Ill.

Filed Nov. 16, 1970, Ser. No. 89,775
Int. Cl. F16c *33/80*
U.S. Cl. 308—187.1 7 Claims



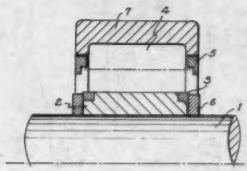
A heavy-duty belt conveyor idler roll construction and a heavy-duty seal assembly construction are disclosed. The idler roll is provided with a heavy gauge outer shell and flat end-head members that are welded to the shell at the inner diameter of the shell so that no weld splatter or rough edges are presented on the working surface of the shell. The idler roll is provided with a solid through-shaft surrounded by a grease sleeve which interconnects the bearing assemblies at the roll ends so that a one-point lubrication positively feeds the lubricants to and through the bearing assemblies and air pockets cannot form in the bearing cavities. Shaft supports are closely spaced to the bearing assemblies to reduce shaft deflection and increase bearing life. The seal assemblies include an outer oil-impregnated adjustable retaining member, a synthetic resin face seal member and a reinforced elastomeric lip seal member arranged to provide a five-pass labrinth seal for excluding foreign matter from the bearing assembly and locking lubricants within the bearing assembly and having characteristics of a dirt exclusion seal and a lubricant retaining seal.

3,680,934

HIGH SPEED ROLLER BEARING

Friedrich Laussermair, Munich, and Albrecht Ziemer, Constance, both of Germany, assignors to Maschinenfabrik Ausburg-Nurnberg A.G., Munich, Germany

Filed Sept. 18, 1970, Ser. No. 73,356
Claims priority, application Germany, Sept. 20, 1969, P 19 47 726.0
Int. Cl. F16c *19/22*
U.S. Cl. 308—212 3 Claims



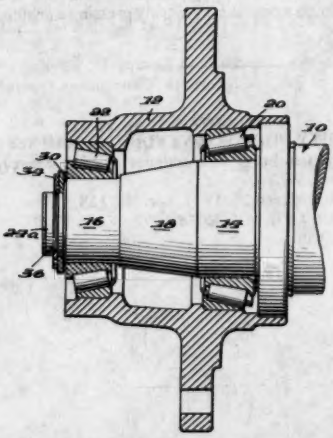
In a high speed roller bearing slippage is lessened by distributing large diameter rollers between smaller rollers so that at high speed, the smaller rollers ride the outer race and the large rollers ride both the inner and outer races.

3,680,935

RETAINING ASSEMBLY FOR TAPERED ROLLER BEARINGS

Hugo Wurzel, Rego Park, N.Y., assignor to Waldes Rochinoor, Inc., Long Island City, N.Y.

Filed Jan. 22, 1970, Ser. No. 4,897
Int. Cl. F16c *33/00*
U.S. Cl. 308—218 7 Claims

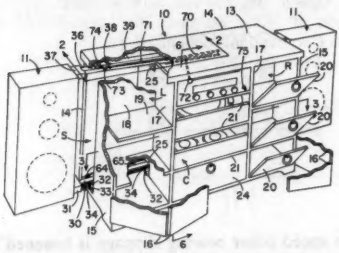


A retaining assembly providing a simplified means and procedure for mounting tapered roller bearings on a shaft in a manner as also insures accurate bearing setting. Said assembly includes a plain metal washer which is located by and held tight and square against the conventional shoulder provided on the shaft which is to receive such a bearing just outwardly of its journal portion by the axial biasing action which a beveled retaining ring sprung into a circumferential groove provided therefor in the shaft just outwardly of said outer shoulder exerts thereon in tending to contract to its unstressed diameter (cf. U.S. Pat. No. 2,509,081, dated May 23, 1950).

3,680,936
STEREO SOUND REPRODUCTION SYSTEM

Peter Heinz Backhaus, R.R. #6, Markdale, Ontario, Canada
Continuation-in-part of Ser. No. 691,352, Dec. 18, 1967, abandoned. This application March 5, 1970, Ser. No. 16,708

Int. Cl. A47b *81/06*
U.S. Cl. 312—7 10 Claims

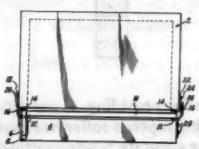


This specification describes a stereo sound reproduction system in which the speakers are mounted separately from the main cabinet, the cabinet being provided with recesses for storage of the speakers when not in use, and being further provided with linkage means connected between the cabinet and the speakers which is extendable and retractable by means of which the speakers may be moved away from the cabinet, while remaining supported on the linkage, and further describes such a system in which the while remaining supported on the linkage, and further describes such a system linkage is power operated and may be provided with movement limiting means whereby a predetermined amount of speaker movement may be preselected, and the speakers moved out to such a position by merely pressing a switch.

3,680,937
SECURITY DOOR FOR VENDING MACHINES

Roy S. Steeley, Leesburg, Va., assignor to Dixie-Marco, Inc., Charles Town, W. Va.

Filed March 26, 1971, Ser. No. 128,373
Int. Cl. A47f *3/00*; E05d *11/00*; E05b *17/00*
U.S. Cl. 312—138 4 Claims

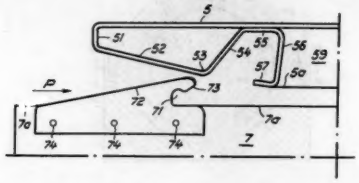


A vending cabinet having a front door defining a slit with the cabinet. Stiff metal strips are secured to the structure, on the cabinet and/or door to span the slit and deter vandals or thieves from prying the door open.

3,680,938
MEANS FOR SUSPENDING FILES OR FOLDERS IN A FILING CABINET

Kurt L. Ohlsson, Moravagen 27, 161 42 Bromma, Sweden

Filed June 9, 1970, Ser. No. 44,736
Claims priority, application Sweden, June 16, 1969, 8511/69
Int. Cl. A42b *17/00*; B42f *15/00*; A47f *5/10*
U.S. Cl. 312—184 1 Claim

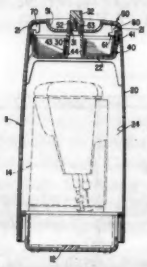


Means for suspending files or folders in a filing cabinet, having a fixing shelving is spaced relationship. The front edge of the shelving is bend into a ledge or rail for supporting the file or folders which have a suspension device.

3,680,939
CARRYING CASE FOR SEWING MACHINES

Robert S. Peets, Watchung, N.J., assignor to The Singer Company, New York, N.Y.

Filed Jan. 28, 1971, Ser. No. 110,434
Int. Cl. A47b *21/00*, *95/02*
U.S. Cl. 312—208 1 Claim



A portable sewing machine carrying case including a cover within which a sewing machine may be secured. An accessory tray and a lid for the accessory tray are each oriented atop the carrying case cover by a handle which projects upwardly from the carrying case cover through apertures in the tray and lid. The lid is additionally formed with depending fingers which engage the sidewalls of the carrying case cover to orient the lid in closed position. The fingers depending from the lid are inturned so that the lid, when removed from atop the carrying case cover, may be hung by the inturned fingers alongside the carrying case cover sidewall.

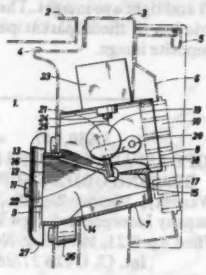
3,680,940
VENTILATING ARRANGEMENT IN DISH WASHING MACHINES

Rolf Johansson, Lindgatan 19, 53400 Varia, and Erik Hojer, Solhagsvagen 45c, 53100 Lidkoping, both of Sweden

Filed Oct. 3, 1970, Ser. No. 86,874
Claims priority, application Sweden, Nov. 18, 1969, 15/796/169
Int. Cl. A47b *96/00*
U.S. Cl. 312—313 3 Claims

In a dish washing machine having a housing with a dish washing chamber open at one side and a shutter pivotally con-

nected to said housing by a horizontal axis for closing or opening said housing open side, a ventilating arrangement is provided through said shutter in which a valveis normally retained in a position closing a passage through said shutter by an elec-



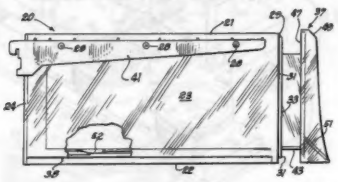
tromagnet controlled pawl and a weight connected to said valve opens the same when said pawl is released and again causes said valve to engage said pawl when said shutter is pivoted to its housing opening position.

3,680,941

FOOD STORAGE COMPARTMENT FOR REFRIGERATOR

Harry R. Shanks, Glen Ellyn, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Filed Feb. 17, 1971, Ser. No. 116,097
Int. Cl. A47b *96/00*
U.S. Cl. 312—296 **2 Claims**



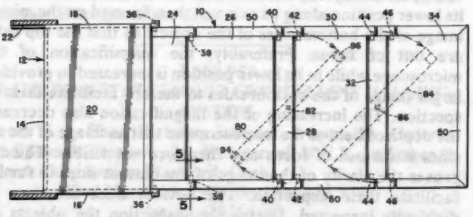
A food storage compartment arranged to be contained wholly within a refrigerator and comprising a housing having a forward opening and marginal edge portions surrounding said opening and carrying a gasket of elastomeric material. A drawer is slidably received in the housing and includes a forward wall having marginal edge portions arranged to abut the gasket to effect substantially sealing engagement therewith.

3,680,942

DRAWER MOUNTED EXPANSIBLE TABLE

Donald A. Davis, 50 Johnson Road, Winchester, Mass.

Filed Dec. 23, 1970, Ser. No. 101,058
Int. Cl. A47b *88/00, 5/00, 3/00*
U.S. Cl. 312—317 **6 Claims**



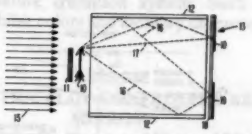
An expansible table stored in the drawer of a cabinet or the like, with the table comprising a plurality of interconnected table sections which can be folded for storing within the drawer and expanded for use. The table includes cleat members which can be pivoted for supporting the table when expanded, and is further provided with folding legs carried by the cleat members and adapted to be folded to a vertical support position when the table is expanded.

3,680,943

HOLOGRAPHIC IMAGING HAVING IMPROVED RESOLUTION AND INTENSITY BY SYNTHETICALLY ENLARGING THE APERTURE

George D. Ogden, Binghamton, and Albert D. Tencza, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1970, Ser. No. 100,735
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **7 Claims**



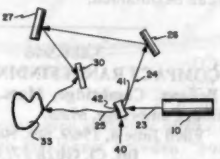
Apparatus for constructing holograms in which reflective or refractive materials are used to recover normally lost object radiation to thereby produce higher spatial frequencies in the reconstructed image, enlarge the effective numeric aperture at relatively long object-to-hologram distances, and improve image resolution. Image intensity is also improved.

3,680,944

HOLOGRAPHIC APPARATUS UTILIZING A PULSED LASER

Charles H. Ernst, Manhattan Beach, and Martin Dean Cawley, Redondo Beach, both of Calif., assignors to TRW, Inc., Redondo Beach, Calif.

Filed Nov. 21, 1968, Ser. No. 777,852
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **6 Claims**



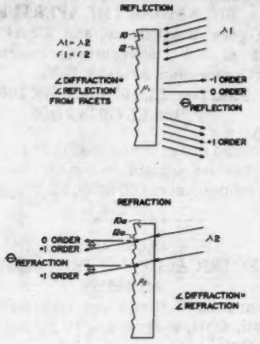
A holographic apparatus capable of utilizing a pulsed laser developing an incompletely coherent light beam for taking holograms, particularly in reflection. The apparatus makes use of a diffuser which is preferably inserted into the unenlarged laser beam for averaging amplitude and phase variations and for scattering the light of the scene beam so that there will be at least a component or portion of the scene beam capable of interfering with a component of the reference beam at each point of the hologram. The pulsed ruby laser may be improved by providing at least one mode selector in the resonant cavity which encloses the ruby rod. This mode selector may, for example, consist of a suitable dye which normally absorbs the light of the laser and becomes transparent when the light intensity exceeds a predetermined amount. Alternatively or in addition a second mode selector may be used which may consist of a resonant reflector such as a Fabry-Perot etalon. The holographic apparatus may be further simplified by utilizing a single lens for reflecting the light of a laser to form a reference beam, while the transmitted light forming the scene beam is diffused by making the opposed surface of the lens into a light diffuser.

3,680,945

FABRICATION OF REFRACTIVE BLAZED HOLOGRAMS

Nicholas K. Sheridon, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 23, 1970, Ser. No. 83,403
Int. Cl. G02b 27/22
U.S. Cl. 350—3.5 18 Claims



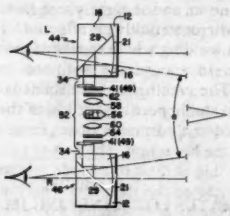
Methods and apparatus for fabricating refractive blazed holograms having high single image diffraction efficiencies. A reflective blazed hologram made with a single wavelength light source may be modified for high blazed efficiencies at any desired wavelength. A reflective blazed hologram surface is replicated onto the surface of a material of higher refractive index, with a shorter wavelength of light utilized fore reconstruction. A further embodiment is to replicate a reflective blazed hologram onto the surface of a material that can be made to undergo an isotropic dimension increase or decrease. When the desired dimension change has taken place, the blazed surface thereof would again be replicated onto the surface of a suitable transparent material of the proper refractive index. Thus, refractive blazed holograms blazed for any wavelength can be obtained.

3,680,946

COMPACT RANGEFINDING DEVICE

Alfred H. Bellows, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 4, 1969, Ser. No. 830,402
Int. Cl. G02b 27/32
U.S. Cl. 350—10 2 Claims



A compact viewing device permits observation of a field of view and superimposes thereon a virtual image of a reticle. The device includes a concave light reflecting surface transecting a line of sight extending from an observer into the field of view and a second mirror transecting the line of sight, the distance along the line between the mirrors being less than the focal length of the concave mirror. The reticle is positioned so that the second mirror directs light from the reticle to the concave mirror along a path which may substantially equal the focal length of the concave mirror. The concave mirror then focuses and redirects the light to the observer to form the virtual image of the reticle.

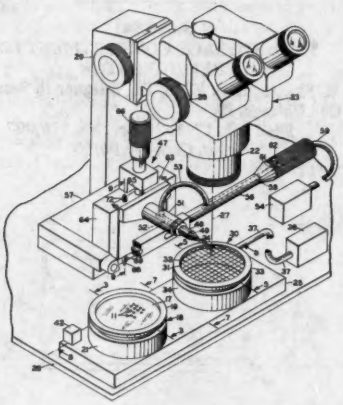
The viewing devices are usable in pairs to form a binocular viewfinder producing a composite virtual image resulting from two distinct left and right eye images. The reticles are movable for causing variation in the apparent position in the field of view of the composite image.

3,680,947

MICROSCOPE APPARATUS WITH MOVABLE FLUID BEARING OBJECT SUPPORT

William R. Wanesky, Wescosville, Pa., assignor to Western Electric Company Incorporated, New York, N.Y.

Filed April 21, 1970, Ser. No. 30,379
Int. Cl. G02b 21/26
U.S. Cl. 350—81 4 Claims



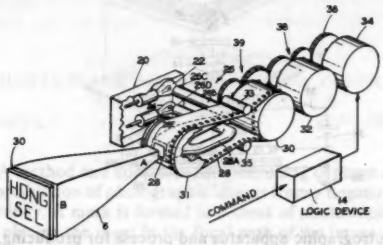
Microscopic insertion of objects such as beam-lead integrated circuits is accomplished by positioning the objects mounted on platforms in a spaced relationship under a vacuum pickup needle located in the field of view of the microscope. Rapid and accurate positioning is aided by air bearing facilities. One of the platforms includes a transparent disc for supporting the bottom sides of the objects. The disc is parallel to and spaced from a mirror which reflects an image of the bottom sides to the microscope. The microscope is first raised to its upper position along its principal axis and focused on the top sides of the objects so that the mirror image of the bottom sides is out of focus and not visible. The top sides are then individually inspected. Next, the microscope is moved to its lower position along its axis and then focused on the mirror image of the bottom sides of the objects so that the top sides are out of focus. Preferably, the magnification of the microscope while in its lower position is increased to provide a larger image of the bottom sides to thereby facilitate their inspection. The increasing of the magnification also decreases the depth of field of the microscope so that an image of the top sides is far out of focus and therefore not visible. This improves the clarity of the image of the bottom sides to further facilitate their inspection. The bottom sides are then individually inspected. During the inspection the objects are separated in accordance with certain characteristics with the aid of a vacuum pickup needle. The movement of the needle is limited by a ball plunger to prevent damage to the objects.

3,680,948

MODE ANNUNCIATION DISPLAY MEANS FOR AIRCRAFT INSTRUMENT PANELS

Arthur Sussman, Jersey City, and Jack Nitzberg, Paramus, both of N.J., assignors to The Bendix Corporation

Filed Dec. 11, 1969, Ser. No. 884,112
Int. Cl. G02b 5/14
U.S. Cl. 350—96 B 8 Claims



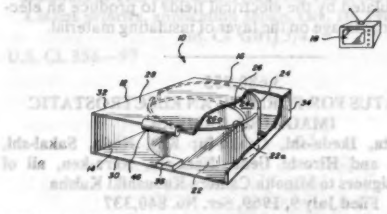
Flight mode display means for an aircraft instrument panel, and which display means uses a tapered fiber optical bundle for magnifying images on a carrier electro-mechanically indexed to the viewing axis of the optical bundle.

3,680,949

RELIEF ILLUSION TELEVISION VIEWING APPARATUS

Salvatore Davino, 818 S. Loomis St., Chicago, Ill.

Continuation-in-part of Ser. No. 830,281, June 4, 1969, abandoned. This application March 25, 1971, Ser. No. 128,094
Int. Cl. G02b 27/22, 3/06, 13/18
U.S. Cl. 350—144 11 Claims



There is disclosed a television viewing apparatus especially adapted to provide an illusion to the user of three-dimensional images comprising: a housing having a first aperture adapted for alignment with the eyes of the user and a second aperture adapted for alignment with a television screen; a convex arcuate segment of transparent material substantially adjacent to the first aperture; a first concave arcuate segment of transparent material substantially adjacent to the second aperture; and a second concave arcuate segment of transparent material and intermediate to the convex arcuate segment of transparent material and to the first concave arcuate segment of transparent material cooperate to deflect the image received from the television screen and provide an illusion of three-dimensional images to the user.

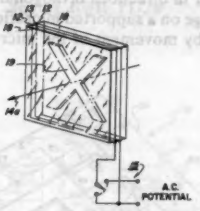
3,680,950

GRANDJEAN STATE LIQUID CRYSTALLINE IMAGING SYSTEM

Werner E. L. Haas, Webster; James E. Adams, Jr., Ontario, and John B. Flannery, Jr., Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed March 15, 1971, Ser. No. 124,139
Int. Cl. G02f 1/20
U.S. Cl. 350—150 28 Claims

A system which transforms a liquid crystalline composition having cholesteric optical characteristics from the focal-conic or "undisturbed" texture state into the Grandjean or "disturbed" texture state by an applied A.C. electrical field, and an imaging system wherein such a liquid crystalline member is



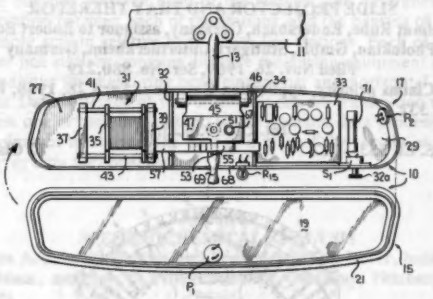
imaged in a desired image configuration by the A.C. electrical field-induced texture transition system. Such transformed compositions exhibit colors and memory characteristics.

3,680,951

PHOTOELECTRICALLY-CONTROLLED REAR-VIEW MIRROR

John F. Jordan; John W. Brean, and Yervand Mathevosian, all of Cincinnati, Ohio, assignors to D. H. Baldwin Company, Cincinnati, Ohio

Filed April 1, 1970, Ser. No. 24,593
Int. Cl. B60r 1/04
U.S. Cl. 350—281 25 Claims



A photoelectrically controlled rear-view mirror employs a first photocell to switch the mirror between "normal" and "adjusted" positions in response to incident light on the mirror, and a second photocell to monitor ambient light and prevent switching of the mirror to the "adjusted" position during daylight hours and at night where high ambient light conditions exist. Mirror switching is effected by a single electromagnet having a winding which conducts current in one direction or the other in accordance with the resistive states of the photocells. The electromagnet displaces an actuating cam to either of two stable positions in which the mirror is positioned in an adjusted or a normal position, respectively.

3,680,952

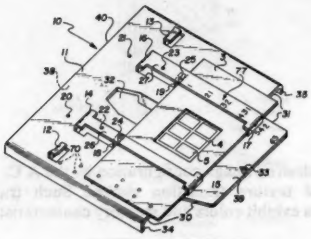
APPARATUS FOR HANDLING IMAGE-BEARING MEDIUMS

Frederick G. Knowles, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,499
Int. Cl. G03b 23/08
U.S. Cl. 353—27 3 Claims

A projected image viewer is adapted to receive and movably support a plate-like carrier which, in turn, can slidingly support a microfiche or similar multi-image-containing medium of the type having projectable images arranged in rows and

columns. The carrier has an aperture across which rows of the images can be moved by sliding of a supported microfiche on the carrier in a first direction. The carrier and supported microfiche can be incrementally received in or withdrawn from the viewer in directions orthogonal to the first direction so that any image on a supported microfiche can be positioned for projection by movement of the microfiche on the carrier



and movement of the carrier into and out of the viewer. A pair of opposed members, located on the carrier, are adjustable to support for movement in the first direction any one of a plurality of sizes of such type mediums. The carrier and the viewer have a plurality of detent elements which cooperate upon incremental receipt and/or withdrawal of the carrier for indicating alignment of an image row with the projection system of the viewer.

3,680,953

SLIDE PROJECTOR AND TRAY THEREFOR

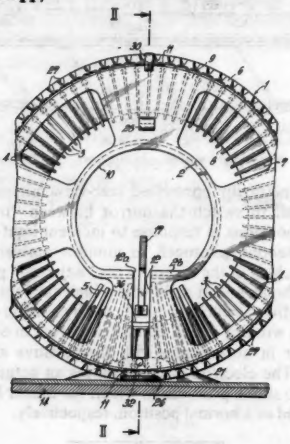
Helmut Rube, Endersbach, Germany, assignor to Robert Bosch Photokino, GmbH, Stuttgart-Untertuerkheim, Germany

Filed Nov. 26, 1969, Ser. No. 880,229

Claims priority, application Germany, April 28, 1968, P 18 11 332.1

Int. Cl. G03b *23/06*

U.S. Cl. 353—117 **12 Claims**



A circular tray for slides which comprises a cupped section rotatable with reference to a concentric core to place successive slides into registry with a slot provided in a disk-shaped flange of the core. The slides are accommodated in compartments extending radially inwardly from a cylindrical wall of the cupped section and the tray can be mounted in a channel of the projector housing only when it is positioned in a predetermined orientation with reference to the projector and when its cupped portion is held in a predetermined angular position relative to the core.

3,680,954

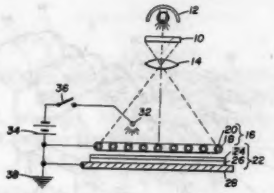
ELECTROGRAPHY

Lee Fitzpatrick Frank, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 452,095, April 30, 1965, abandoned. This application Sept. 27, 1965, Ser. No. 492,988

Int. Cl. G03g *15/02*

U.S. Cl. 355—3 **13 Claims**



An electrographic apparatus and process for producing, on a record medium having a layer of insulating material in contact with an electrically conductive backing member, an electrostatic charge image corresponding to an image to be recorded comprises an image grid and at least one control grid arranged between a corona discharge device and the layer of insulating material. The image grid comprises an electrically conductive core having insulating and conducting areas defining the image to be produced. The control grid is electrically conductive and arranged in spaced and generally parallel relation to the image grid and between the latter and the corona discharge device. When the core of the image grid and control grid are individually biased to a potential for establishing electrical fields of different strengths between the respective areas and the backing member and a flow of ions is directed toward the grids and the record medium, the flow of ions through the grids is modulated by the electrical fields to produce an electrostatic charge image on the layer of insulating material.

3,680,955

APPARATUS FOR FORMING AN ELECTROSTATIC IMAGE IN A CAMERA

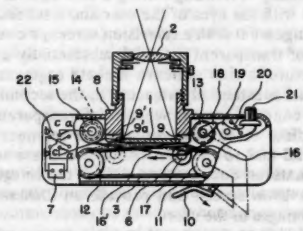
Kintaro Yata, Ikeda-shi, Osaka-fu; Koji Noda, Sakai-shi, Osaka-fu, and Hiroshi Ueda, Nara-shi, Nara-ken, all of Japan, assignors to Minolta Camera Kabushiki Kaisha

Filed July 9, 1969, Ser. No. 840,337

Claims priority, application Japan, July 16, 1968, 43/50025

Int. Cl. G03q *15/18*

U.S. Cl. 355—3 **8 Claims**



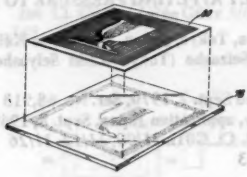
In a camera wherein images are formed electrostatically, a flexible photosensitive element is spaced from a transparent electrode and an electrode roller engages the flexible photosensitive element into contacting relationship along a narrow width thereof with the transparent electrode. The roller is translated across the transparent electrode so that a latent image is formed on the flexible photosensitive element. The apparatus includes structure for impressing a D.C. voltage between a transparent electrode and an electrode roller to provide the necessary electrostatic field to transfer the image.

3,680,956

APPARATUS FOR CONTROLLING CONTRAST DURING REPRODUCTION OF PHOTOGRAPHIC IMAGES

Peter Custer, Box 100, Newtown, Pa.

Filed Dec. 17, 1970, Ser. No. 99,106
Int. Cl. G03b 27/76
U.S. Cl. 355—71 8 Claims



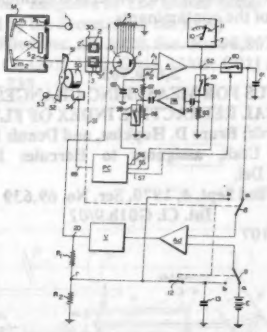
A method and apparatus for controlling contrast during the reproduction of photographic images from a negative or transparency. A mask is formed in a sheet of phototropic material by placing the sheet in the focal path of the image and transmitting the image to the sheet by a sheet-activating radiation source. Phototropic materials characteristically darken on exposure to a radiation source of certain wavelengths. The intensity of the radiation source may be selectively varied to produce a masking image of the desired density. The reproduction exposure is then made through the original image and the mask formed on the phototropic sheet prior to clearing of the masking image.

3,680,957

AUTOMATIC SPECTROPHOTOMETER

Yoshio Fukuda, Takatsuki, Japan, assignor to Shimadzu Seisakusho Ltd., Kyote Prefecture, Japan

Continuation-in-part of Ser. No. 765,958, Oct. 8, 1968, abandoned. This application Aug. 14, 1970, Ser. No. 63,787
Claims priority, application Japan, Oct. 10, 1967, 42/65088
Int. Cl. G01j 3/42
U.S. Cl. 356—97 4 Claims



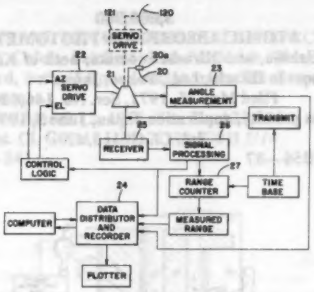
A spectrophotometer so constituted that calibration of the photometric circuit can be automatically performed to attain quick and precise measurement. The dynode supply voltage of a photomultiplier in the spectrophotometer is controlled to adjust the sensitivity of the spectrophotometer in such a way that, when a reference sample is put in the path of monochromatic light to the photomultiplier, the amplified output of the photomultiplier becomes equal to the standard value. Then an unknown sample is put in said light path and the intensity of transmitted light is measured at the same photomultiplier sensitivity as is calibrated by the above-mentioned adjustment by setting the voltage supplied to the photomultiplier dynodes at the said adjusted value. Thus, the light absorption coefficient of the unknown sample as compared to that of the reference sample can be precisely as well as quickly measured.

3,680,958

SURVEY APPARATUS

Robert J. Von Bose, Arlington, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed Oct. 15, 1970, Ser. No. 80,848
Int. Cl. G01b 11/26
U.S. Cl. 356—141 8 Claims



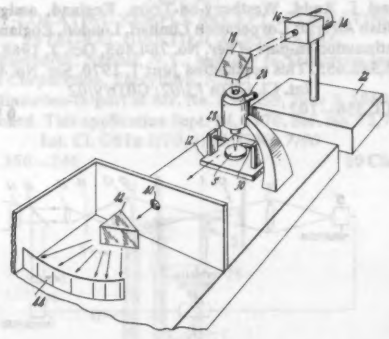
Disclosed is an automated surveying system composed of three separate stations. Two base line stations are positioned at selected points on the terrain and the distance between them measured. A third station is positioned at successive remote points on the terrain, removed from the base line stations, and topographic and contour data are collected for each successive remote location of the third station by measuring the distance between each of the stations, the difference in elevation between each of the stations, and the bearing of the remote station relative to the base line stations. Each of the base line stations contains distance measuring equipment and apparatus for measuring both elevational and horizontal angles. Data collected by two of the stations are transmitted to a main one of base line stations which contains data processing equipment to convert the data to a map of the terrain as the survey data are collected.

3,680,959

SPECTROCHEMICAL ANALYSIS

John A. Schuch, Weston, and Frederick Brech, Dover, both of Mass., assignors to Fisher Scientific Company, Pittsburgh, Pa.

Filed Feb. 25, 1963, Ser. No. 260,412
Int. Cl. G01j 3/30
U.S. Cl. 356—86 15 Claims



1. Excitation apparatus useful in spectrochemical analysis comprising means for holding a sample to be spectrochemically analyzed,

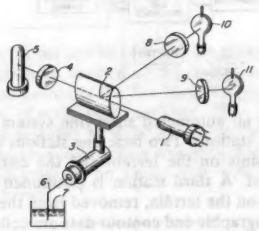
means for directing a coherent beam of photons onto said sample with sufficient energy to dislodge a portion to be analyzed from the sample,
and auxiliary means for raising the excitation energy of the dislodged portion so produced to cause emission, within a spectroscopically examinable field, of electromagnetic radiations characteristic of chemical elements present in said dislodged portion.

3,680,960

ATOMIC ABSORPTION PHOTOMETER

Koichi Uchino, and Hiroshi Inomata, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 25, 1971, Ser. No. 146,620
Claims priority, application Japan, June 3, 1970, 45/47156
Int. Cl. G01j 3/42
U.S. Cl. 356—87 13 Claims



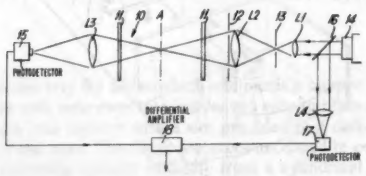
An atomic absorption photometer in which an electrical signal representative of the beam of light passed through a flame is integrated by an integrator, and an electrical signal representative of the emission spectrum peculiar to the flame is differentiated by a differentiator to be utilized as an integration starting signal. The photometer is provided with means for generating an electrical signal in response to the introduction of a standard sample into the flame and ceasing to generate the electrical signal in response to the introduction of a sample to be examined into the flame due to the fact that the emission spectrum of a particular substance in the sample to be examined appears when it is introduced into the flame. The photometer is further provided with means which generates an electrical signal in response to the application of both the electrical signal generated by said means and the output from the differentiator thereby offering a zero adjustment of the light absorbance.

3,680,961

MEASUREMENT OF PARTICLE SIZES

Michael J. Rudd, Westbury-on-Trym, England, assignor to British Aircraft Corporation Limited, London, England

Continuation-in-part of Ser. No. 764,465, Oct. 2, 1968, Pat. No. 3,548,655. This application June 1, 1970, Ser. No. 42,038
Int. Cl. G01n 15/02; G01b 9/02
U.S. Cl. 356—102 6 Claims



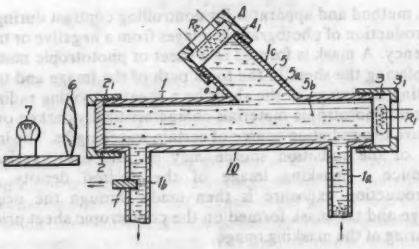
The size of particles moving in a confined path is measured by moving the particles through an interference pattern of fringes produced by a pair of coherent light beams. The periodic fluctations in the light intensity as the particles move across the fringes are recorded on a fixed photodetector and the particle size is derived from a measurement of the magnitude of the fluctuations.

3,680,962

CONTAMINANT DETECTOR COMPRISING MEANS FOR SELECTIVELY APPLYING PRESSURE TO LIQUIFY BUBBLES

Osamu Hayakawa, Tokyo, Japan, assignor to Kabushikikaisha Tokyo Keiki Seizosho (Tokyo Keiki Seiyosho Co., Ltd.), Tokyo, Japan

Filed Sept. 2, 1970, Ser. No. 68,913
Claims priority, application Japan, Sept. 8, 1969, 44/84450
Int. Cl. G01n 21/00, 21/12, 21/26
U.S. Cl. 356—103 2 Claims



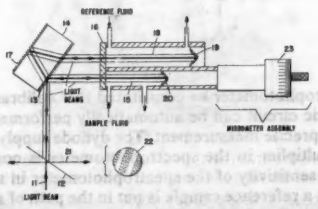
An instrument for detecting and/or measuring amount of contaminants contained in a liquid comprises a tube through which a liquid to be measured flows, a light source projecting substantially parallel light into the tube, a photoelectric conversion element for receiving light passed through the liquid the electric property of which is changed in accordance with the intensity of light incident thereon, and an indicator for indicating the amount of the contaminants in the liquid. In this case the photoelectric conversion element is changed in its electric property in accordance with the light intensity and is so connected to the indicator that the variation of the electric property of the photoelectric conversion element correspons to the amount of the contaminants.

3,680,963

APPARATUS FOR MEASURING CHANGES IN THE OPTICAL REFRACTIVE INDEX OF FLUIDS

Louis J. Edwards; Bruce D. Hopkins, and Dennis D. Rice, all of Salt Lake, Utah, assignors to Hercules Incorporated, Wilmington, Del.

Filed Sept. 4, 1970, Ser. No. 69,639
Int. Cl. G01b 9/02
U.S. Cl. 356—107 4 Claims

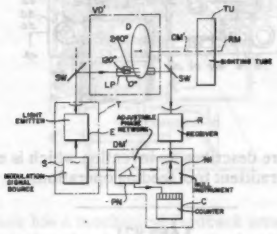


Apparatus for measuring changes in the optical refractive index of fluids including an interferometer cell having compartments for the fluids. Coherent light is split and separate beams thereof are passed through each of the fluid compartments and then combined to form a single optical beam which is projected on to matched light detectors to measure the difference in the optical refractive index of the fluids in the compartments.

3,680,964
INSTRUMENT FOR COMBINED ANGULAR AND DISTANCE MEASUREMENTS

Carl-Erik Granqvist, Lidingo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed Sept. 8, 1970, Ser. No. 70,118
Claims priority, application Sweden, Nov. 27, 1969, 16301/69
Int. Cl. G01b 11/26; G01c 3/08
U.S. Cl. 356—141 **10 Claims**

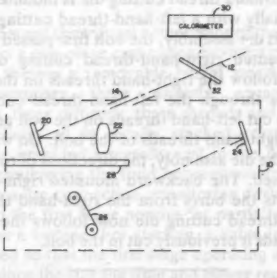


An instrument for measuring distance by transmitting modulated light and receiving reflected light having a phase delay representing the distance. The instrument has an internal delay network for delaying the transmitter signal and a null instrument responsive to the phase difference between the output of the delay network and that of the receiver. An angular measurement, for instance azimuth or elevation, obtained according to the invention is provided by coupling a rotatable member representing the angle to control the delay of a light path, which can be inserted between the transmitter and the receiver.

3,680,965
BEAMSPREAD MEASUREMENT CAMERA FOR RECORDING LASER BEAM INTENSITY DISTRIBUTION

James B. Dilworth, Birmingham, Ala., and Thomas G. Crow, Orlando, Fla., assignors to The United States of America as represented by the Secretary of the Army

Filed Dec. 10, 1970, Ser. No. 96,807
Int. Cl. G01j 1/40; G01n 21/06; G01j 1/00
U.S. Cl. 356—235 **6 Claims**

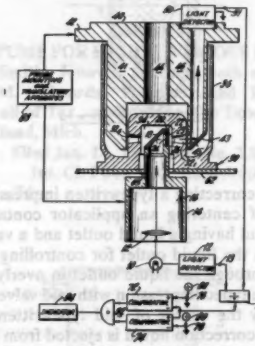


Energy distribution within a laser beam is measured and a sample of the intensity is obtained, providing a self-calibrated photograph on a single film sample. A burst of laser energy striking a wedge plate or prism within the beamspread measurement camera is divided into multiple reflections within the prism. Each reflection is at a slightly greater angle than the preceeding one and is attenuated with respect thereto. Each reflection is collected by a lens and focused onto a spectrographic plate located at the lens focal point. The diameter of each image on the film is the product of the lens focal length and beamspread. The distribution pattern of each reflected sample is recorded on the same plate and can be compared with preceeding samples, each sample being a known percentage of the preceeding waves. Relative energy as a function of beamspread is determined by measuring the energy density of each image with a densitometer. Any point on each image of reflected energy is a known percentage of that point on the other images and provides a standard for determining the contour ring for a particular energy density on the initial spot, thus providing a contour map of the main beam.

3,680,966
APPARATUS AND METHOD FOR SHELL INSPECTION

Henry Robert Cofek, Fairfield, and Frederick Thomas Farrace, Milford, both of Conn., assignors to Iris Corporation, Hamden, Conn.

Filed March 12, 1971, Ser. No. 123,691
Int. Cl. G01n 21/16, 21/32; G01l 5/14
U.S. Cl. 356—241 **8 Claims**



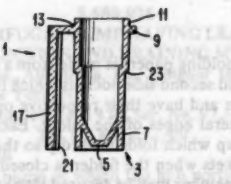
Optoelectronic apparatus for inspecting the size of apertures in a shell casing includes a light source probe, having an output light diffusing element with a masked central area, for presenting a torroidal zone of constant light intensity about an aperture under test. A light receiving probe couples incident light passing through the aperture to a light detector. The electrical output of the light detector, providing a measure of aperture area, is then tested against upper and lower bounds to characterize the aperture as being of a proper or improper size.

In accordance with one aspect of the present invention, the output of the light detector is normalized to obviate the effects of light intensity variations at the source probe.

3,680,967
SELF-LOCATING SAMPLE RECEPTACLE HAVING INTEGRAL IDENTIFICATION LABEL

Alvin Engelhardt, Nanuet, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

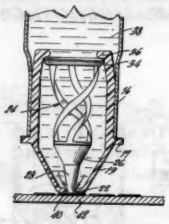
Continuation-in-part of Ser. No. 830,059, June 3, 1969, abandoned. This application Sept. 14, 1970, Ser. No. 72,743
Int. Cl. G01n 1/10, 1/00; G06k 7/00
U.S. Cl. 356—246 **10 Claims**



A liquid sample receptacle includes an integral label portion carrying machine-readable indicia identifying the sample

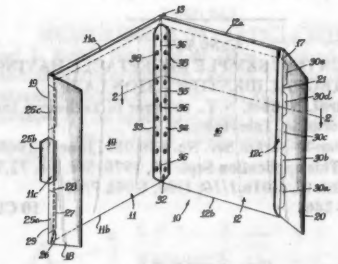
source and located substantially parallel to the longitudinal axis of a cup portion. The sample receptacle is structured with respect to the turntable unit to properly align the machine-readable indicia for automatic readout.

3,680,968
METHOD OF CORRECTING TYPEWRITTEN IMPRESSIONS
Gilbert Schwartzman, 20 Wilmot Circle, Scarsdale, N.Y., and Robert Glenn, 70-20 108th St., Flushing, N.Y.
Filed Feb. 24, 1970, Ser. No. 13,303
Int. Cl. B43k *5/06*
U.S. Cl. 401—260 **2 Claims**



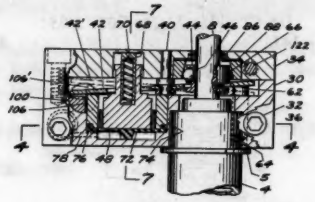
A method of correcting a typewritten impression comprising the steps of centering an applicator containing a correction liquid and having a liquid outlet and a valve head extending through the liquid outlet for controlling flow of correction liquid through the liquid outlet in overlying relationship relative to a typed impression with said valve head engaging substantially the center of said typewritten impression. Therefore, said correction liquid is ejected from said applicator to form a disc of correction liquid having a ring of greatest thickness adjacent the periphery of said disc and surrounding the impression to be corrected, and then allowing said disc of correction liquid to dry.

3,680,969
POCKET-FOLDER AND BINDER
Joseph Gorman, 8815 Golf Road, Des Plaines, Ill.
Filed Aug. 4, 1970, Ser. No. 60,869
Int. Cl. B42f *3/00*; B42d *3/18*
U.S. Cl. 402—3 **1 Claim**



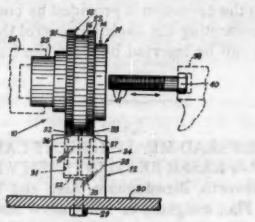
A folder for holding papers is made from a single sheet, and includes first and second side pockets which fold about a common center line and have their respective openings disposed on opposite lateral edges of the folder. Each pocket is provided with a flap which folds inwardly so that they seal their associated pockets when the folder is closed about its center line. A binder member may be secured along the center line of the folder for holding papers between the pockets which serve as a cover for the papers held in the binder.

3,680,970
FEED CONTROL
Richard E. Deschner, 5550 Harcross Drive, Los Angeles, Calif.
Filed Dec. 14, 1970, Ser. No. 97,667
Int. Cl. B23b *47/22*
U.S. Cl. 408—17 **15 Claims**



This disclosure describes an invention which is efficient for controlling intermittent tool feeding operations.

3,680,971
MACHINE AND METHOD FOR ADDING LEFT THREADS TO RIGHT THREADED BOLT
Mark B. Andrews, Sr., Box 9, Cape Coral, Fla.
Filed Sept. 23, 1970, Ser. No. 74,735
Int. Cl. B23g *1/02, 5/00*
U.S. Cl. 408—1 **6 Claims**

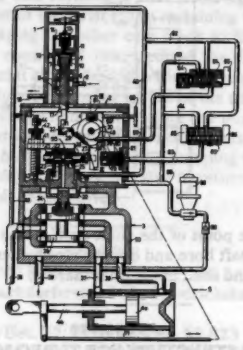


Apparatus and method for cutting left-hand threads on a right-hand bolt and removing burrs resulting from such cutting. A right-hand thread cutting die is mounted backward to rotate coaxially with a left-hand-thread cutting die. On insertion into this die assembly, the bolt first passed through the backward mounted right-hand-thread cutting die teeth of which merely follow the right-hand threads on the bolt. Then the bolt passes through the left-hand-thread cutting die the teeth of which cut left-hand threads on the bolt and also form burrs on the right-hand threads of the bolt. On withdrawal of the bolt from the die assembly, the directions of rotation of the dies are reversed. The backward mounted right-hand-thread cutting die cuts the burrs from the right-hand threads while the left-hand thread cutting die now follows the path of the left-hand threads it previously cut in the bolt.

3,680,972
ELECTRO HYDRAULIC CONTROL DEVICE FOR WATER TURBINES
Carl-Erik Ringholm, Trollhattan, Sweden, assignor to Aktiebolaget NOHAB, Trollhattan, Sweden
Filed Dec. 11, 1969, Ser. No. 884,239
Claims priority, application Sweden, Dec. 17, 1968, 17268/68
Int. Cl. F01b *25/06*
U.S. Cl. 415—36 **9 Claims**

An electrohydraulic governor for water turbines with electric controller controls the main valve for the turbine's guide-

vane ring servomotor via a control transmission and a control head by means of electric feedback from the said servomotor.



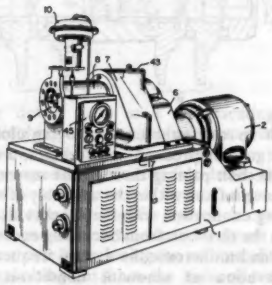
The governor has a mechanical feedback arrangement which is connected when the electric controller is out of action.

3,680,973

COMPRESSOR POWER RECOVERY

Karol Pilarczyk, Loudonville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed June 8, 1970, Ser. No. 44,463
Int. Cl. F04d *27/00*; F04c *29/04*; F04d *17/08*
U.S. Cl. 415—53 7 Claims



The three stage centrifugal compressor of the present invention employs a one-piece cast casing having a cylindrical bore containing therein a removable barrel assembly, which assembly comprises three directly engaging clamped diaphragms, three diffusers, three shrouds and a rotor having three impellers, all in axially stacked relationship. Fluid passages are provided integrally cast in the diaphragms and casing for conducting the fluid between stages and from the last stage to a use connection, monitoring devices and a feedback line to the first stage nozzles for partially operating the first stage as a turbine. For starting, a valve in the feedback line is opened so that the first stage operating as a partial turbine will reduce the starting time and power required. On partial load, for example, the output pressure will rise to again open the feedback line valve to reduce power consumption.

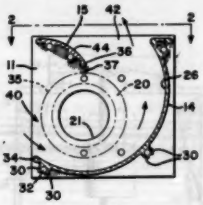
3,680,974

TRANSVERSE-FLOW BLOWER AND HOUSING

James L. Smith, Piqua, Ohio, assignor to Lau Incorporated, Dayton, Ohio

Filed Sept. 30, 1970, Ser. No. 76,691
Int. Cl. F04d *17/08, 29/40, 27/00*
U.S. Cl. 415—54 8 Claims

A blower housing for a tangential blower is formed of structural members made essentially of aluminum extrusions. A back member is formed with a cylindrical inside surface and approximates a volute with the blower wheel circumference.



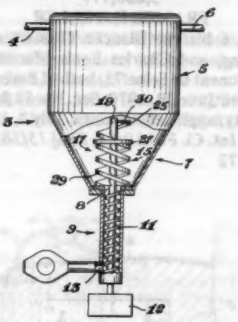
A reversible cut-off section provides selection over air delivery rates. A twin blower embodiment uses common extruded end frames.

3,680,975

ROLL PUMP FOR HIGHLY VISCOUS MATERIAL

William F. Smith; John H. Mitchell, both of Lake Jackson; William M. Edwards, Freeport, and Phillip W. Cox, Brazoria, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 14, 1970, Ser. No. 2,854
Int. Cl. F04d *3/02*; B29f *3/00*
U.S. Cl. 415—74 9 Claims



Highly viscous material, e.g., a molten plastic, is rapidly removed from a reservoir with a roll pump positioned in an opening of the reservoir. The roll pump has a shaft extending through the opening into the reservoir and rotatable within a stationary feed member, e.g., a modified double right helix mounted within the reservoir near the opening. The helix is sufficiently open to the viscous material such that the latter flows through the helix to the shaft. The turning shaft and the open stationary member cooperate to direct the viscous material near the shaft through the opening in the reservoir.

3,680,976

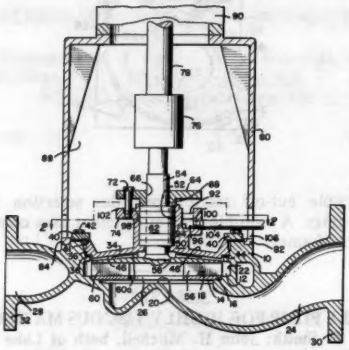
CENTRIFUGAL PUMP HAVING LEAKAGE COLLECTION AND DRAINING MEANS

Frederic W. Buse, Allentown, Pa., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,544
Int. Cl. F01d *11/00*
U.S. Cl. 415—110 17 Claims

A centrifugal pump in which the hub portion of the casing cover is provided with a liquid leakage collecting channel having a recessed portion communicating through a drainage outlet with a conduit discharging liquid collected in the channnel.

Also, the side face of the casing cover external to the pumping chamber slopes downwardly towards its periphery for facilitating collection of liquid at the periphery; and a drainage conduit communicates with such periphery for removing the collected liquid.



3,680,977

FRAMED IMPELLER

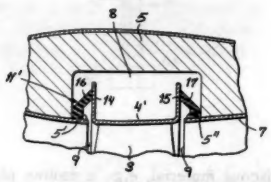
Denis Rabouyt, 6 bis rue Blanche Clamart department des Hauts de Seine, and Charles Louis Marsot, 152 Champs Elysees department de Seine 75, both of Paris, France

Filed June 29, 1970, Ser. No. 50,052

Claims priority, application France, July 1, 1969, 6922183

Int. Cl. F01d *9/00*; F16j *15/38*

U.S. Cl. 415—172 **3 Claims**



An impeller with a rotor carrying a set of fan blades has a circular duct of streamlined profile surrounding the rotor blades, the latter having their tips interconnected by a ring received with small clearance in an annular groove on the inner duct periphery so that this periphery is flush with the inner ring surface. Elastic inserts in the gap between the ring and the duct may be used to minimize or eliminate the intervening clearance.

3,680,978

HIGH TEMPERATURE FAN CONSTRUCTION

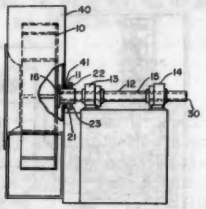
Robert Mercer, Cohasset, Mass., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 1, 1971, Ser. No. 122,563

Int. Cl. F04d *29/58*; F16n *1/00*; F16d *1/06*

U.S. Cl. 415—180 **5 Claims**

A high temperature fan hub is secured to a hollow drive shaft by hollow driving pins projecting radially above the hub and extending transversely of the hub and shaft to communicate with the bore of the shaft. The hub has an end wall enclosing the bore at that end of the shaft to which it is secured and rotation of the shaft causes cooling fluid to be pumped from a remote point of the shaft such as the end of the shaft through the shaft bore and driving pins by centrifugal force to cool the hub and shaft at the joint thereof.



3,680,979

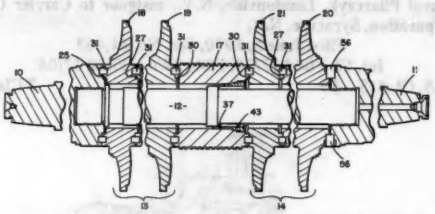
ROTOR STRUCTURE FOR TURBO MACHINES

Raymond E. Hansen, New Alexandria, and Eugene L. Huesgen, Jeanette, both of Pa., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 7, 1970, Ser. No. 78,728

Int. Cl. F01d *5/06*

U.S. Cl. 416—198 **4 Claims**



In a built-up rotor structure employing a long thru-bolt as in multistage gas compressors and turbines, a support sleeve is fixed on the bolt passing through the assembly of wheels. A second sleeve is fixed within the assembly of wheels and has an interlocking connection with the support sleeve which serves to restrain the thru-bolt from becoming eccentric to the wheel assembly, and to increase the natural frequency of the bolt to avoid operation at resonant conditions. The structure nevertheless accommodates normal radial growth of the individual parts due to centrifugal forces and temperature changes, and axial growth due to temperature changes.

3,680,980

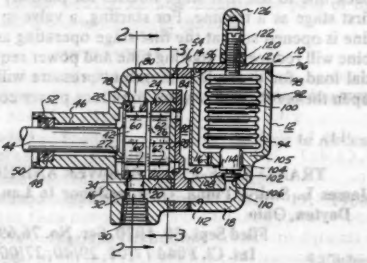
FUEL PUMP

Hans U. Bart, 5820 Duck Lake Road, Whitehall, Mich.

Filed Feb. 20, 1970, Ser. No. 12,965

Int. Cl. F04b *49/00*; F04c *11/00, 13/00*

U.S. Cl. 417—253 **11 Claims**



A fluid pump having a housing with an inlet and an outlet, and provided with a pair of cam tracks in a side by side rela-

tionship. A vane carrying rotor is rotatably mounted within the cam tracks, a portion of the vanes carried by the rotor engaging one track and forming a first pumping means connected to the inlet of the device; the remaining vanes carried by the rotor engaging the other cam track to form a second pumping means connected intermediate the first pumping means and the outlet of the device, whereby a single flow path is defined through both pumping means of the device. A pressure regulator is connected intermediate the pumping means and takes the form of an aneroid operable to maintain a constant pressure at the inlet of the second pumping means and to open at a predetermined pressure value to return a portion of the fluid to the inlet of the device.

3,680,981

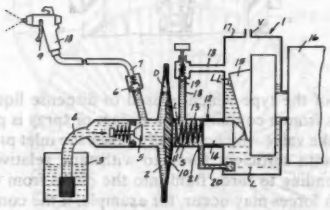
PUMP AND METHOD OF DRIVING SAME

Josef Wagner, Markdorferstr. 165, Friedrichshafen-Spaltenstein, Germany

Filed Dec. 21, 1970, Ser. No. 99,823

Int. Cl. F04b *9/08, 35/02;* **F15b** *7/00, 7/08;* **F04b** *43/06, 45/00*

U.S. Cl. 417—388 **27 Claims**



A fluid transfer device such as a reciprocating pump, preferably of the diaphragm type suitable for use with an airless spray-gun for painting and the like, having a pumping side for the fluid to be pumped and a driving side driven through a piston through a solution or mixture of liquid and gas, such as oil and air. Under throttled or standby operation conditions, reduced diaphragm movement is accommodated without changing the piston stroke by reducing the volume of the driving liquid and by releasing gas from the reduced volume of liquid to prevent vaporization and condensation of the driving fluid itself. A dead space is provided on the pumping side allowing some diaphragm movement into the pumping side even when completely closed so that only a small proportion of driving liquid is released and only a small amount of gas is freed from the driving liquid to accommodate the reduced diaphragm movement during the full piston stroke. The loading and unloading of the driving fluid on the power and suction strokes of the piston is controlled so that the driving fluid is always above its vapor pressure. The gas is released from the driving liquid according to Henry's Law.

3,680,982

ROTARY ACTUATOR

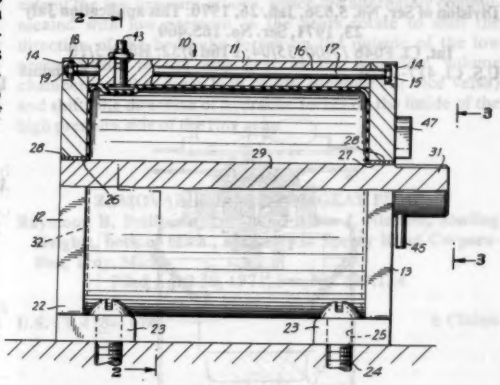
Alphonse A. Jacobellis, Los Angeles, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Filed March 3, 1971, Ser. No. 120,656

Int. Cl. F04b *17/00, 35/00;* **F04c** *21/00;* **F01c** *5/00*

U.S. Cl. 417—392 **8 Claims**

The invention relates to a rotary actuator of the type having a movable vane positioned in a cylindrical casing and secured to and extending radially outward from a shaft extending axially through the casing and a fixed vane extending radially in the casing toward the axial shaft, so that the fixed vane and the movable vane define two variable volume cavities in each of which a deformable bladder is positioned, with means being provided to permit fluid under pressure to pass into and out of said bladders, to effect expansion of one of the bladders for consequent movement of said movable vane and the shaft to



which it is secured, with resultant compression of the other bladder and expulsion of the fluid therefrom.

3,680,983

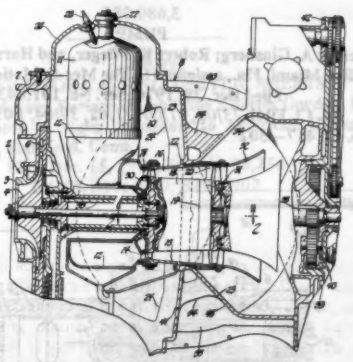
GAS TURBINE ENGINE BLOCK

Albert H. Bell, III, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 9, 1970, Ser. No. 79,730

Int. Cl. F04b *17/00, 35/00;* **F02c** *7/02;* **F28d** *39/00*

U.S. Cl. 417—409 **2 Claims**



A regenerative gas turbine engine includes an engine block or frame having two end faces and four side faces with a bulkhead dividing the interior of the block into a chamber for high pressure air discharged from the compressor and a chamber for low pressure gas discharged from the turbine. The turbine is mounted centrally in the bulkhead and regenerator disks are mounted on two opposite faces of the block. The bulkhead defines a support for cross-arm seals of the regenerator and is of a double-walled construction providing a cooling air passage through the bulkhead tapering from one end toward the center and then diverging towards the other end of the passage.

3,680,984

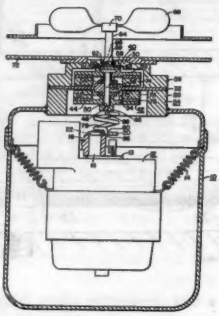
COMPRESSOR COMBINED FLEXIBLE AND MAGNETIC DRIVE COUPLING

Robert R. Young, Murrysville, and William A. English, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 5,636, Jan. 26, 1970. This application July 23, 1971, Ser. No. 165,460

Int. Cl. F04b *17/00, 35/04;* F16d *3/52;* H02k *5/10*

U.S. Cl. 417—420 8 Claims



This invention provides a flexible drive coupling mounted between a resiliently supported prime mover and a rigidly supported power take-off shaft. The prime mover in the instant application is a compressor and is situated in a hermetic enclosure so that a magnetic coupling means is provided between the flexible drive coupling powered power take-off shaft and an output so as to drive the output shaft mounted outwardly of the hermetic enclosure. This output shaft may conveniently mount a fan, belting or the like so as to receive its power from the prime mover.

3,680,985

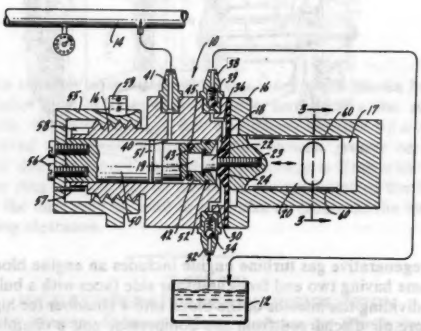
PUMP

Guenter A. Ginsberg; Robert K. Pfleger, and Harry A. Savage, all of Miami, Fla., assignors to The Mec-O-Matic

Filed Dec. 28, 1970, Ser. No. 101,643

Int. Cl. F04b *23/00, 41/00, 21/02, 39/04;* F01b *31/14*

U.S. Cl. 417—502 21 Claims



A pump, comprising: a pumping chamber; reciprocating means associated with the pumping chamber so as to increase and decrease the volume thereof; an inlet passageway in fluid communication wit the pumping chamber; a discharge passageway in fluid communication with an upper portion of the pumping chamber so as to discharge substantially all gasses and excess liquid from the pumping chamber; an outlet passageway in fluid communication with the pumping chamber; and means associated with the reciprocating means for periodically collecting a predetermined quantity of liquid, substantially void of gasses, from the pumping chamber and directing it through the outlet passageway.

3,680,986

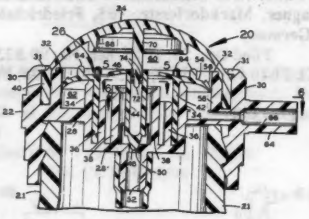
PUMP WITH MECHANICAL ASSIST

Louis F. Kutik, 8720 S.W. 25th Place, and Erich W. Gronemeyer, 2100 S. Ocean Lane, both of Ft. Lauderdale, Fla.

Filed Nov. 9, 1970, Ser. No. 87,864

Int. Cl. F04b *7/00;* B67d *5/40*

U.S. Cl. 417—520 11 Claims



A pump of the type which is used to dispense liquids and semi-liquids from a container as a stream or spray is provided with an intake valve which normally closes the inlet passage of the pump with sufficient force to withstand relatively high pressures tending to force fluid into the pump from the container. Such forces may occur, for example, if the container is a plastic bottle which is squeezed. The actuator of the pump engages the intake valve when the actuator is depressed to assist in opening the intake valve, so that upon the return stroke of the actuator, fluid is sucked into the pump to be expelled therefrom when the actuator is again depressed.

3,680,987

ROTARY PISTON ENGINE

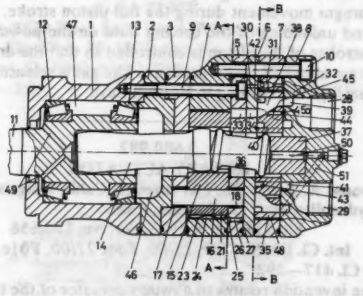
Carl V. Ohrberg, Havnbjerg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed June 15, 1970, Ser. No. 45,953

Claims priority, application Germany, June 19, 1969, P 19 31 144.5

Int. Cl. F01c *1/02;* F03c *3/00;* F04c *1/02*

U.S. Cl. 418—61 1 Claim



The invention relates to a rotary piston engine of the type having an internally toothed ring and an externally toothed wheel which is orbitably and rotatably movable relative to the ring. The motor has a disk shaped valve which is driven by the externally toothed wheel through a universal joint shaft. In

order that the shaft only applies torque to the valve, to the exclusion of any axially directed force, the valve has a splined bore and is journalled on a cylindrically shaped abutment which is fixed relative to the casing. The shaft has a splined head which engages the splined bore of the valve to effect rotation of the valve but the shaft head is in axial thrust engagement with the abutment so that no axial forces are transmitted to the valve. The valve and casing parts are appropriately and uniquely disigned with cooperating annular recesses so that axially directed hydraulic forces on the valve are also minimized. The overall result is that there is no mechanical axial loading of the valve and little or no hydraulic axial loading of the valve.

3,680,988

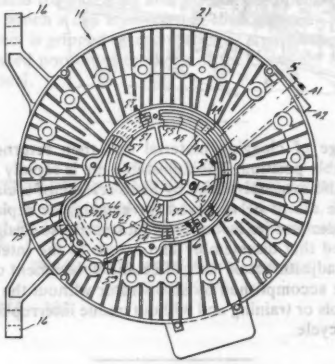
PORTING ARRANGEMENT FOR ROTARY MACHINE

Robert W. King, Sidney, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Continuation of Ser. No. 813,934, April 7, 1969, abandoned. This application Feb. 23, 1971, Ser. No. 118,096

Int. Cl. F02b *53/06*; F16k *15/16*

U.S. Cl. 418—61 **5 Claims**



A rotary piston type four cycle internal combustion engine embodying a pressure responsive check valve in the induction system for reducing gas back flow resulting from port overlap common with this type of mechanism.

3,680,989

HYDRAULIC PUMP OR MOTOR

Robert Wesley Brundage, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Sept. 21, 1970, Ser. No. 74,068

Int. Cl. F01c *1/10*; F03c *3/00*; F04c *1/06*

U.S. Cl. 418—71 **13 Claims**

A high pressure hydraulic motor (or pump) of the type comprised of an externally toothed gear inside of an internally toothed ring gear in turn rotating on a spaced axis inside of a sleeve bearing surface wherein grooves are provided in the bearing surface generally on the neutral axis which are communicated to high pressure in combination with a low pressure groove on the low pressure side of the ring gear communicated with low pressure to prevent distortion of the ring gear under the unbalanced high hydraulic pressures on the side thereof. Two additional grooves are provided, one on each side of the low pressure groove, which are alternately communicated with low pressure as the gears rotate to shift the direction of the hydraulic forces on the outside of the low pressure side of the ring gear as the maximum volume chamber switches from high to low pressure (or vice versa) and shifts the direction of hydraulic forces on the inside of the high pressure side of the ring gear.

3,680,990

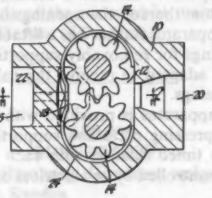
REMOVABLE LINER FOR GEAR PUMP

Raymond B. Pettibone, Troy, and Albin J. Niemiec, Sterling Heights, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.

Filed April 30, 1971, Ser. No. 139,124

Int. Cl. F04c *1/08, 15/00*

U.S. Cl. 418—178 **6 Claims**



A hydraulic pump of the intermeshing spur gear type has a one-piece liner for the gear cavity in the body. The liner is a C-shaped piece of resilient metal coated with bearing material and in its free state, is larger than the cavity and requires elastic compression to be inserted therein. The inlet passage is formed with three branches for improved filling at high speeds.

3,680,991

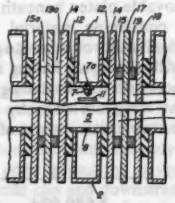
DEVICE FOR CASTING ACRYLIC SHEETS

Alan Clifford Cate, Springvale, and Roy Charles Gordon, Kenneburk, both of Maine, assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 15, 1970, Ser. No. 98,254

Int. Cl. B29c *5/00*; B29d *7/02*

U.S. Cl. 425—86 **2 Claims**



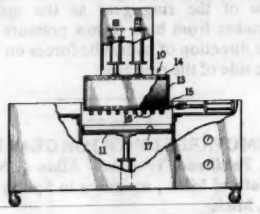
A temperature conducting metallic member having hollow upper and lower sections thereof vertically spaced apart by columns and a plurality of support bars connected to said upper and lower sections, said upper section having spray means and liquid inlet means therein and said lower section having liquid removal means therein, is disclosed.

3,680,992

CAKE STOCK DISPENSING APPARATUS

Tadahiro Kajitani, 288-28 Oaza-Anyoji Ritto-cho, Kurita-gun, Shiga Pref., Japan

Filed Nov. 25, 1970, Ser. No. 92,675
Int. Cl. A21c 11/16
U.S. Cl. 425—167 1 Claim



A cake stock dispensing apparatus in which a depressing plate is provided in a cake stock container which has a number of openings adapted to extrude a certain quantity of cake stock in the bottom thereof, the openings being controlled by a shutter. The apparatus further has a liftable supporting plate below the openings for removably supporting a disk thereof, the latter being adapted to receive the cake stock extruded through the openings.

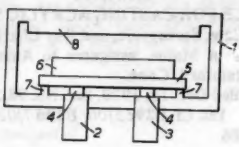
Further, the apparatus is provided with means for driving said shutter, depressing plate and supporting plate with the disk in properly timed relation with each other, said means being perfectly controlled by an electrical control circuit.

3,680,993

MOULDING PRESS

David Clive Senior, Sheffield, England, assignor to Davy and United Engineering Company, Limited, Sheffield, England

Filed Oct. 13, 1969, Ser. No. 865,721
Claims priority, application Great Britain, Oct. 14, 1968, 48,628/68
Int. Cl. B28b 3/08
U.S. Cl. 425—167 7 Claims



A moulding press for moulding concrete panels has a fixed top plate and a movable platen beneath the top plate for supporting a mould containing material to be moulded. The platen consists of a plurality of separate parts arranged in side-by-side relation with each part having at least one hydraulic ram associated therewith for displacing the member towards and away from the top plate whereby material contained in the mould is displaceable into and out of pressing relation with the top plate.

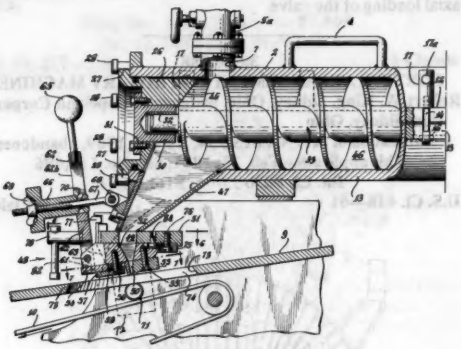
3,680,994

QUICK CLEARING EXTRUDER AND ADJUSTABLE EXTRUDER DIE ASSEMBLY FOR FOODSTUFFS

John G. Longenecker, Ozone Park, N.Y., assignor to Ael Food Automation Inc., Norwalk, Conn.

Filed Jan. 28, 1971, Ser. No. 110,456
Int. Cl. A21c 11/16
U.S. Cl. 107—14 C 12 Claims

Foodstuff extrusion apparatus in which the extruder has a split-half housing secured together by hand releasable clamps and a bayonet locked end plate cover removable by turning a disassembly handle so that access to the extruder interior may be rapidly obtained. The extruder screw is removably attached to the power shaft and may be axially withdrawn for cleaning. The extrusion apparatus also features an adjustable die in cooperation with a rotary cutter which defines an orifice, the size of which may be finely controlled by means of a hand operated releasably locking vernier. The vernier is released so that the adjustable die may be quickly opened widely to permit passage of clogging material and then returned to its preadjustable position. The adjustable die is rapidly detachable from the extruder outlet by hand release of a clamp permitting the die to be removed for cleaning or replacement. The extruder and its associated features are so designed and constructed that disassembly and access to the interior, fine and gross adjustment of the orifice and detachment of the die may all be accomplished by an operator without the need for special tools or training and without undue interruption of the extrusion cycle.

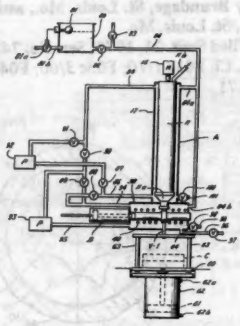


3,680,995

MOLDING APPARATUS FOR CANDLES AND THE LIKE

Preston J. Frazier, Jr.; Daniel W. Hubenak, Jr., and Wallace E. Johnson, all of Houston, Tex., assignors to Faroy, Inc.

Filed June 22, 1970, Ser. No. 48,071
Int. Cl. C11c 5/02
U.S. Cl. 425—200 5 Claims



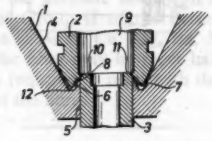
Molding apparatus for obtaining and maintaining candle wax in a semi-solid condition and for injecting same under pressure into a mold for forming any desired shape of candle or the like.

3,680,996

APPARATUS FOR MOULDING A CONTAINER COMPONENT

Rolf Lennart Ignell, Lund, Sweden, assignor to Sobrefina SA, Fribourg, Sweden

Filed Sept. 15, 1970, Ser. No. 72,266
Claims priority, application Sweden, Sept. 17, 1969, 12807/69
Int. Cl. B29c 3/00, 17/10
U.S. Cl. 425—292 3 Claims



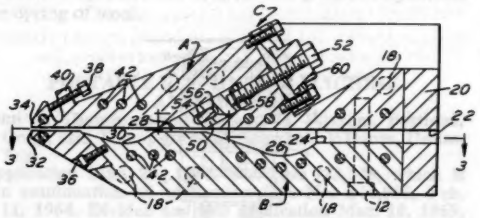
Apparatus for moulding and shaping the opening of a container in which a cap is inserted in such a fashion that a portion thereof is gripped by and embraces a particularly smooth and polished portion of the neck of the container to form an air-tight seal.

3,680,997

EXTRUSION STRIP DIE FOR THERMOPLASTIC SHEET

Andrew A. Dukert, Ambler, and Alkis Christofas, Levittown, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed June 29, 1970, Ser. No. 50,514
Int. Cl. B29f 3/06
U.S. Cl. 425—381 4 Claims



A strip die for extruding high melt viscosity thermoplastic materials into sheet which includes a midstream valving restrictor bar of sectioned configuration. Individually adjustable segments in the valving bar allows the throughput rate, pressure and shear to be varied across the entire die width.

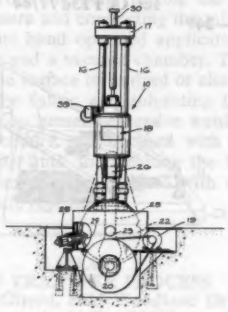
3,680,998

PRESSES

John Charles Sharman, Walsall, England, assignor to G.K.N. Engineering Limited, Redditch, England

Filed Oct. 20, 1970, Ser. No. 82,413
Int. Cl. B29c 3/00; B30b 1/28
U.S. Cl. 425—394 2 Claims

A press particularly intended for use in the pressing of blocks or sheets of a synthetic plastics material has a crank drive mechanism and a hydraulic drive mechanism and the two drive mechanisms are so controlled as to obtain rapid opening and closing of the press while maintaining straight-line movement of the ram of the press.

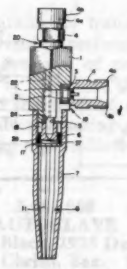


3,680,999

BURNER UNIT

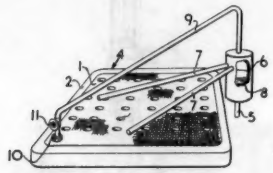
Friedrich W. Hill, Hamburg, Germany, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed March 13, 1970, Ser. No. 19,365
Claims priority, application Germany, March 14, 1969, P 19 13 014.4
Int. Cl. F23n 5/02
U.S. Cl. 431—21 20 Claims



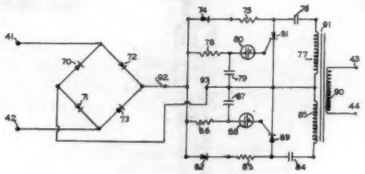
A burner unit for the production of a high energy flame of oxygen gas or air and a fuel gas, preferably acetylene. The burner comprises two separate inlets for the oxygen or air and for the fuel gas. A non-return valve is built into each inlet. The oxygen or air inlet is in communication with a central bore of a nozzle pressure plug mounted inside a nozzle cap. The central bore develops into a cone giving the oxygen or air a high velocity. Inside the nozzle cap and downstream of said nozzle pressure plug, a nozzle slot-piece is inserted. On the outer perimeter of the nozzle slot-piece a number of mixing ducts are arranged. The mixing ducts are in longitudinal alignment with fuel gas supply openings surrounding the central bore of the nozzle pressure plug and are provided with a small twist. Inside the central bore a safety device is attached to the wall of the bore. The safety device is made as a substance which separates or melts at a predetermined temperature and which is carried away by the gas stream to close the conical ending of the central bore.

3,681,000
BURNERS
Peter G. Ware, Rugby, England, assignor to Dunlop Holdings Limited, London, England
Filed Sept. 17, 1970, Ser. No. 73,013
Int. Cl. F23d *11/44*
U.S. Cl. 431—247 **6 Claims**



A liquid fuel burner having a burner element in the form of a plurality of ducts for the supply of one combustion component, a second combustion component being supplied from the regions between the ducts, the burner having heat conductors to transmit heat from the burner to a vaporization chamber in which liquid fuel is vaporized for supply to the burner element.

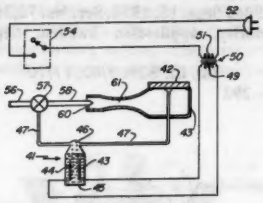
3,681,001
FLUID FUEL IGNITER CONTROL SYSTEM
William F. Potts, Liverpool, N.Y., assignor to Liberty Combustion Corporation, Syracuse, N.Y.
Division of Ser. No. 586,593, Sept. 26, 1966, and a continuation of Ser. No. 739,606, April 2, 1968. This application May 15, 1970, Ser. No. 37,450
Int. Cl. F23q *3/00*
U.S. Cl. 431—264 **1 Claim**



Fuel burner spark ignition generator having a high voltage transformer secondary connected to the electrodes of a spark gap, and a primary connected in series with a capacitance, and means for charging the capacitance, and effecting a discharge of the capacitance through the transformer primary, upon the elapse of a predetermined time during the charging of the capacitance.

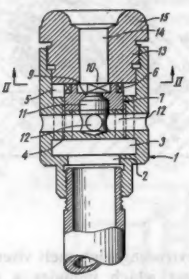
3,681,002
SELF-IGNITING BURNERS
Esher R. Weller, 7616 William Ave., Downers Grove, Ill.; William R. Staats, 3100 Wabash Ave., Chicago, Ill., and Robert B. Rosenberg, 9138 Mozart, Evergreen Park, Ill.
Filed Oct. 20, 1969, Ser. No. 867,480
Int. Cl. F23d *13/16*
U.S. Cl. 431—268 **2 Claims**

A self-igniting gas burner which includes, generally, an oxidation catalyst which is supported by means of a gas-permeable catalyst support plate. A mixture of gaseous fuel is supplied to and permeates through the catalyst support plate. In doing so, the gaseous fuel is oxidized to cause combustion.



The combustion of the gaseous fuel heats the catalyst support plate which then radiates heat to a load. The hot products of reaction also pass through the catalyst support plate, to heat the load.

3,681,003
GAS BURNER
Nikolai Nikolaevich Nekrasov; Alexandr Lvovich Blinchikov; Vasily Leonidovich Kazansky; Alexandr Fedorvich Besedin, all of Novokuibyshevsk; Anatoly Filippovich Krikunenko; Egor Maximovich Makarov; Alexei Lavrentievich Zemskov; Fridrikh Ivanovich Afinogenov, all of Syzran; Sergei Pavlovich Kirichenko, and Alexei Andreevich Kulikov, both of Novokuibyschevsk, all of U.S.S.R., assignors to Assignors to Kuibyshevsky Filial Vsesojuznogo mauchno-issledovatel skogo instituta neftepererabatyvajuschel Promyshlennosti, Novokuibyshevsk, U.S.S.R.
Filed April 13, 1970, Ser. No. 27,797
Int. Cl. F23d *15/02*
U.S. Cl. 431—353 **3 Claims**



A gas burner is provided with a generator of resilient oscillations installed in the path of the gas flow, the generator being made as a double-threaded Archimedian screw and also serving as a whirler located symmetrically with respect to the longitudinal axis of the mixing chamber. The latter chamber serves as a resonator and communicates with the outlet nozzle and with channels for supplying an oxidizer.

CHEMICAL

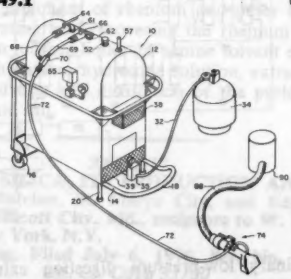
3,681,004
POLYACRYLONITRILE FIBRES
Brian J. D. Torrance, Coventry, England, assignor to Courtaulds Limited, London, England
No Drawing. Filed Jan. 12, 1970, Ser. No. 2,423
Claims priority, application Great Britain, Jan. 20, 1969, 3,067/69
Int. Cl. D06p *5/00*
U.S. Cl. 8—17 **5 Claims**

A method of improving the resistance to discolouration by heat of a wet-spun carboxylate acrylic fibre, comprising impregnating the gel-state fibre with a solution of a salt of a metal of Group II of the Periodic Table. The preferred salts are those of Ca, Mg, Ba, Sr and Zn. The salt retained by the fibre may be from half to twice that stoichiometrically required to react with the available carboxylate groups of the fibre.

3,681,005
DYEING WOOL IN FIBROUS MATERIAL CONTAINING WOOL WITH 1:2 METAL COMPLEX AZO DYES, ACID AND AROMATIC HYDROCARBONS, CARBOXYLIC ACIDS/ESTERS OR PHENOLS
Hans-Ulrich von der Eltz and Norbert Kollodzeiski, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Aug. 12, 1969, Ser. No. 849,513
Claims priority, application Germany, Aug. 20, 1968, P 17 69 997.7
Int. Cl. D06p *3/14*
U.S. Cl. 8—43 **9 Claims**

Process for dyeing fibrous materials made of or consisting of wool with 1:2 complex metal compounds of azo dyestuffs insoluble or sparingly soluble in water in which process a dyebath is used that contains, additionally to said dyestuffs and an acid, auxiliaries known as carriers, such as aromatic hydrocarbons, aromatic halohydrocarbons, aromatic carboxylic acids or esters thereof or phenol derivatives. The advantage of the process of the present invention is especially to be seen in the fact that easily obtainable dyestuffs can be used with good color yield for the dyeing of wool.

3,681,006
PORTABLE RUG DYEING MACHINE AND METHOD
John A. Thompson and William H. Wisdom, Portland, Oreg.; said Thompson assignor to said Wisdom, Dallas, Tex.
Application Mar. 29, 1968, Ser. No. 723,325, which is a continuation of application Ser. No. 344,085, Feb. 11, 1964. Divided and this application Mar. 10, 1969, Ser. No. 825,474
Int. Cl. B08b *3/00, 3/02*
U.S. Cl. 8—149.1 **6 Claims**

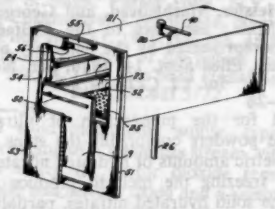


The present application discloses a machine having a boiler unit including a tank for holding hot dye or cleaning solution mounted on a portable wheeled base. Method and means are provided for drawing off steam and hot treating solution from the tank, mixing the steam and solution under pressure and conducting the mixture under pressure to a remote hand operated applicator equipped with a spray nozzle and a vacuum chamber. The applicator is moved over the surface to be dyed or cleaned, spraying solution into the fabric and subjecting the sprayed fabric to a vacuum to prevent excessive wetting thereof. The foregoing procedure can be used with a cleaning solution in the boiler unit for cleaning the fabric. The cleaning solution can then be replaced with a dye solution and the procedure repeated.

3,681,007
CORE TRANSFER PROCESS
Herbert A. Girard, 1025 Woodland Drive, Gastonia, N.C. 28052
Filed Jan. 12, 1971, Ser. No. 105,920
Int. Cl. B05c *8/02*
U.S. Cl. 8—155 **7 Claims**

A method and apparatus for transferring a package of yarn supported by a rigid imperforate transfer core to a foraminous, resilient dye core of predetermined smaller diameter comprising, in sequence, the steps of inserting the resilient core into the transfer core; and, removing the transfer core while preventing axial movement between the yarn package and resilient core.

3,681,008
AUTOCLAVE
Robert B. Black, 2925 Denver St., Corpus Christi, Tex. 78404
Original application Apr. 4, 1969, Ser. No. 813,537. Divided and this application Dec. 14, 1970, Ser. No. 98,070
Int. Cl. A61l *3/00;* **B65d** *43/12*
U.S. Cl. 21—93 **4 Claims**



An autoclave, particularly adapted for use as a sterilizer, and in which the functions of steam generation and

sterilization are performed in separate steam generating and autoclaving chambers, with provision for controlled delivery of steam from the generating chamber to the autoclaving chamber. A feed water system is also provided incorporating a receptacle for receiving sequential batches of feed water and for heating such batches to a temperature providing a pressure adequate to deliver the batch into the steam generating chamber.

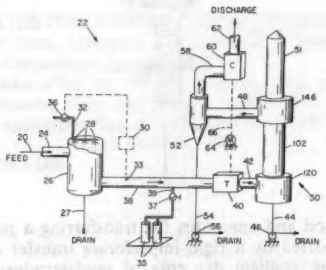
The equipment further includes a closure for the autoclaving chamber and means interlocking the operation of the closure with the function of transfer of steam from the generating chamber to the autoclaving chamber. The closure for the autoclaving chamber is in the form of a sliding door mounted adjacent to the access opening into the autoclaving chamber in a manner providing for sealing of the door under the influence of the pressure of the steam introduced into the autoclaving chamber from the steam generating chamber.

3,681,009

METHOD AND APPARATUS FOR REMOVING MATERIAL FROM GAS

Caperton B. Horsley, East Walpole, Mass., assignor to Braxton Corporation, Medfield, Mass.

Filed Dec. 10, 1969, Ser. No. 883,782
Int. Cl. B01d *47/00*
U.S. Cl. 23—2 R **17 Claims**



Treating gas to remove unwanted particles suspended therein by first introducing and dispersing secondary particles into the gas, then exposing the gas to a sonic field which induces differential motion between suspended particles of different sizes whereby the particles are caused to collide with each other and agglomerate into composite particles, and then removing the composite particles from the gas.

3,681,010

PREPARATION OF ULTRAFINE MIXED METALLIC-OXIDE POWDERS

Donald R. Messier, Marblehead, and George E. Gazza, Sudbury, Mass., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Sept. 14, 1970, Ser. No. 72,224
Int. Cl. C22b *59/00*
U.S. Cl. 23—20 **4 Claims**

A method for the preparation of ultrafine mixed metallic-oxide powders comprising the steps of: comelting stoichiometric amounts of hydrated nitrates of at least two cations, freezing the melt to produce an intimate mixture of the solid hydrated nitrates, partially dehydrating the solid mixture at a subliquidus temperatures and heating the dehydrated mixture in order to drive off the nitrogen and decompose the mixture to the oxide.

3,681,011

CRYO-COPRECIPITATION METHOD FOR PRODUCTION OF ULTRAFINE MIXED METALLIC-OXIDE PARTICLES

George E. Gazza, Sudbury, and Donald R. Messier, Marblehead, Mass., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Jan. 19, 1971, Ser. No. 107,837
Int. Cl. C22b *59/00*
U.S. Cl. 23—24 R **6 Claims**

A cryo-coprecipitation method for the production of stoichiometric ultrafine mixed metallic-oxide powders comprising the steps of: preparing an aqueous solution of mixed salts containing each cation in the desired stoichiometric proportion, freezing to form spheroids, contacting the spheroids with an aqueous hydroxide solution to precipitate mixed-cation hydroxides, drying and calcining the precipitate.

3,681,012

PROCESS FOR MAKING ALUMINA

Frederick J. Sibert, Chicago, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 537,011, Mar. 24, 1966, which is a continuation-in-part of application Ser. No. 452,373, Apr. 30, 1965, now Patent No. 3,390,959, dated July 2, 1968. This application June 17, 1969, Ser. No. 834,132
Int. Cl. C01f *7/06*
U.S. Cl. 23—143 **3 Claims**

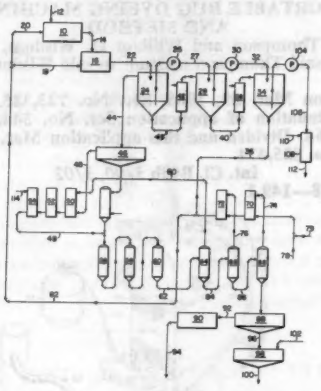
Red mud is removed from aqueous caustic solutions of alumina by using as a coagulation treatment starch plus certain acrylic acid polymers.

3,681,013

EXTRACTION OF ALUMINA FROM BAUXITE

William M. Fish, St. Louis, Mo., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 2, 1970, Ser. No. 7,831
Int. Cl. B01d *11/02*; C01f *7/06*
U.S. Cl. 23—143 **10 Claims**



Preliminary low-pressure digestion extracts alumina from a coarse fraction of bauxite. Fines separated from the coarse fraction are also passed on for super-atmospheric digestion.

3,681,014

PURIFICATION OF HYDROGEN CHLORIDE

Homer L. Hackett, Ponca City, Okla., David A. Cullison, Athens, Ga., and Edmond A. Peveto, Westlake, La., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed June 1, 1970, Ser. No. 42,546
Int. Cl. C01b 7/08
U.S. Cl. 23—154 4 Claims

The present invention relates to a method of removing unsaturated organic impurities from a gaseous stream of hydrogen chloride. The gas stream is contacted with a liquid reactant selected from the group consisting of chlorosulfonic acid, mixtures of chlorosulfonic acid and sulfuric acid, fuming sulfuric acid and mixtures thereof. Unreacted hydrogen chloride essentially free of unsaturated organic impurities is recovered.

3,681,015

PURIFICATION OF GASES

Abraham P. Gelbein, Plainfield, and Benjamin J. Luberoff, Summit, N.J., assignors to The Lummus Company, Bloomfield, N.J.

No Drawing. Continuation-in-part of application Ser. No. 585,761, Oct. 11, 1966. This application Jan. 21, 1970, Ser. No. 4,770
Int. Cl. B01d 53/34
U.S. Cl. 23—2 R 7 Claims

Acidic gases are removed from gas streams by contacting the stream with a solvent composition comprising (a) an organic solvent which is liquid at room temperature, has a solubility for CO_2 at 25° C. and atmospheric pressure of not less than about one volume of CO_2 per volume of solvent, said solvent having a boiling point at atmospheric pressure of at least about 150° C., being unreactive with amines and containing at least one functional group other than hydroxyl, characterized by the presence of an element selected from the group consisting of oxygen, nitrogen, sulfur and phosphorus, the functional groups present in the solvent molecule in number exceeding the number of hydroxyl groups when the molecule contains more than one hydroxyl group and (b) a secondary monohydric alkanolamine.

3,681,016

RECOVERY OF RHENIUM AND MOLYBDENUM VALUES FROM SOLUTION

John E. Litz, Lakewood, Colo., assignor to Continental Ore Corporation, New York, N.Y.

Filed Dec. 2, 1970, Ser. No. 94,268
Int. Cl. C22b 59/00
U.S. Cl. 23—15 W 4 Claims

A process for recovering rhenium and molybdenum values from solution comprising: extracting the soluble molybdenum and rhenium values with an amine solvent, stripping the values from the amine extract with an ammonium hydroxide solution, purifying the strip solution of copper, iron, silicon, phosphorous, and arsenic, crystallizing the molybdenum as ammonium tetramolybdate containing a minimum of rhenium and other impurities, and concentrating and recovering the rhenium from the crystallization mother liquor by amine solvent extraction, stripping with sodium hydroxide solution, extraction into a pyridine solvent, and distillation of the pyridine away from a rhenium salt.

3,681,017

PLATELET SILICA, ITS PRODUCTION AND USES

Howard J. Butcher, St. Marys City, and Edgar Alan Simpson, Ellicott City, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed July 6, 1970, Ser. No. 52,711
Int. Cl. C01b 33/00
U.S. Cl. 23—182 14 Claims

Microporous platelet silica is prepared from the ammonium form of sodium silicate (i) by freeze-drying and filtration or (ii) by freezing and thawing and filtration, or (iii) by lowering the pH and repeating (ii). The resultant unitary, polymeric, microporous silica platelets can be used as fillers in high gloss films.

3,681,018

IRON NITRIDE, Fe_4N, AS A MATERIAL FOR MAGNETIC RECORDING AND METHOD OF MANUFACTURING SAME

Karl-Georg Knauff, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed June 18, 1970, Ser. No. 47,591
Claims priority, application Netherlands, June 21, 1969, 6909541
Int. Cl. C01b 21/06
U.S. Cl. 23—191 3 Claims

It is proposed to use a powder of iron nitride, Fe_4N, consisting of rod-shaped particles and having a longitudinal axis of from 0.5 to 2 microns, which longitudinal axis is at least 5 times as long as the largest diameter of any cross-section of the particle in question at right angles to said axis, as a material for magnetic recording. The invention furthermore relates to a method of preparing such a powder. According to this method, a powder of iron oxide or iron oxide hydrate, the particles of which have approximately the same shape and dimensions as the above-mentioned iron nitride particles, is reacted in a fluid bed at a temperature between 350° C. and 400° C. with a mixture of hydrogen and ammonia. If desirable, the iron nitride formed is subsequently treated in the same fluid bed with a weakly oxidizing gas mixture so as to stabilize it, that is to say, deprive it of its pyrophoric properties.

3,681,019

COATED SUBSTRATE OR ARTICLE HAVING A LOW FRICTION SURFACE RESISTANT TO DEWETTING AT ELEVATED TEMPERATURES AND PROCESS OF FORMING

Sheldon W. Dean, Hamden, Conn., assignor to Olin Corporation

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,724
Int. Cl. B44d 1/34; C23c 3/00
U.S. Cl. 29—195 11 Claims

A substrate or article having a low friction surface resistant to dewetting at elevated temperatures and a process of making same. The low friction surface comprises two layers. The first layer comprises a metal selected from zinc, copper, cadmium, bismuth, tin, antimony, lead, iron and their alloys. The second layer comprises a metal soap. Preferably, the first layer is zinc and the second layer is a sodium soap and the substrate or article is a lamp base of aluminum or an aluminum alloy.

3,681,020

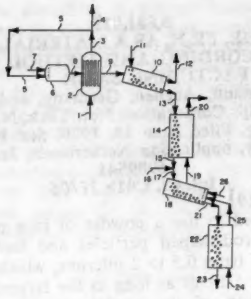
THERMAL CONVERSION OF MAGNESIUM SULFITE TO MAGNESIUM OXIDE

Indravadan S. Shah, Forest Hills, N.Y., assignor to Chemical Construction Corporation, New York, N.Y.

Filed June 11, 1970, Ser. No. 45,512
The portion of the term of the patent subsequent to May 4, 1988, has been disclaimed
Int. Cl. C01f 5/12
U.S. Cl. 23—201 12 Claims

Hydrated solid magnesium sulfite, typically derived from the scrubbing of a waste gas stream with magnesium oxide-sulfite slurry for slufur dioxide removal, is converted to solid magnesium oxide and a sulfur dioxide-rich gas stream by a combination of steps including drying to form anhydrous magnesium sulfite by heating the wet hydrated crystals to 300° C. to 700° C. in a non-oxidizing atmosphere, followed by addition of carbon to the

anhydrous salt and calcining of the mixture under controlled conditions. The process produces regenerated magnesium oxide and the sulfur dioxide-rich gas stream



without oxidation of sulfite to sulfate, and without sulfur trioxide formation.

3,681,021

PRODUCTION OF HEAVY WATER EMPLOYING A GROUP VIII CATALYST

Richard J. Mikovsky, Trenton, and Sundaresa Srinivasan, Princeton, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Mar. 31, 1970, Ser. No. 24,324
Int. Cl. B01j *11/00*; C01b *4/00, 5/02*
U.S. Cl. 23—204 C **8 Claims**

Heavy water is produced in a liquid-gas-solid reaction system employing a catalyst comprising a Group VIII metal on a resin support.

3,681,022

MANUFACTURE OF STABLE HYDROGEN PEROXIDE SOLUTIONS

William H. Kibbel, Jr., Pennington, and Eugene T. O'Neill, Hightstown, N.J., assignors to FMC Corporation, New York, N.Y.

No Drawing. Filed May 1, 1970, Ser. No. 33,928
Int. Cl. C01b *15/02*
U.S. Cl. 23—207.5 **3 Claims**

Very stable hydrogen peroxide solutions are made by adding an alkaline sodium stannate solution, adjusted to pH 10.5 to 11.0, with nitrilo trimethylene phosphonic acid, either adding it to concentrated hydrogen peroxide or feeding the two materials simultaneously into a mixer, and then adjusting the pH of the hydrogen peroxide to 2.75 to 3.25 for 35% peroxide solutions, and to corresponding lower or higher pH for more or less concentrated solutions, with additional nitrilo trimethylene phosphonic acid. Inorganic phosphate may be present if desired.

3,681,023

PRODUCTION OF CARBON FIBERS

Yoneho Tabata, Matsudoshi, Chihiro Oizumi, Tokyo, and Sugio Otani, Kiryuushi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha

No Drawing. Filed Dec. 15, 1969, Ser. No. 885,350
Claims priority, application Japan, Dec. 20, 1968, 43/93,060
Int. Cl. C01b *31/07*
U.S. Cl. 23—209.4 **5 Claims**

Carbon fiber having a high tensile strength and a high value of Young's modulus is produced by heating, to a substantially carbonized state stretched polyacrylonitrile fiber prepared from polyacrylonitrile which has been produced by the solid state radiation polymerization of acrylonitrile at a temperature not higher than the melting point of acrylonitrile, i.e., −83° C. The carbon fiber so produced can be used as a reinforcement in a composite material.

3,681,024

METHOD FOR PRODUCTION OF SULFUR FROM HYDROGEN SULFIDE USING OXYGEN

Karol L. Hujsak and John W. Palm, Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Continuation of application Ser. No. 724,949, Apr. 29, 1968. This application Aug. 10, 1970, Ser. No. 62,690
Int. Cl. C01b *17/04*
U.S. Cl. 23—225 P **7 Claims**

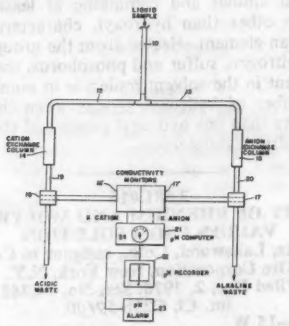
The volume of sulfur plant effluent discharged to the atmosphere is materially decreased by the use of substantially pure oxygen rather than air down stream from the reactor(s). The uncondensed fraction separated from the product sulfur is subjected to a condensing or quenching step where any free sulfur vapors present in such fraction are removed from the system. The portion of the fraction which remains uncondensed is split into two streams, the larger one of which is recycled to the furnace, and the smaller one purged to the atmosphere.

3,681,025

METHOD AND SYSTEM TO MONITOR pH VALUES IN WATER

Svend B. Dalgaard, 101 Gedney St., Apt. 6G, Nyack, N.Y. 10960

Filed Aug. 19, 1970, Ser. No. 65,004
Int. Cl. B01j *1/04*; G01n *27/26, 33/18*
U.S. Cl. 23—230 R **6 Claims**



A method and system for monitoring the pH value in a continuously flowing liquid sample. The method comprising splitting a continuously flowing sample stream into two streams, passing one stream through a cation exchange resin column, and passing the other stream through an anion exchange resin column, measuring the specific electrical conductivity of the cation exchange resin column effluent, measuring the specific electrical conductivity of the anion exchange resin column effluent, and obtaining the pH value of the sample by solving the equation

$$pH = 7 - \log \frac{Kcat}{1.65\ Kan}$$

where Kcat is the specific conductivity in ohms^{-1} cm.^{2} of the cation exchange resin effluent, and Kan is the specific conductivity in ohms^{-1} cm.^{2} of the anion exchange resin effluent. The system comprises a conduit for conducting the liquid sample, means for splitting the sample into two streams and conducting one stream through a cation exchange resin column and for conducting the other stream through an anion exchange resin

column, specific conductivity cells for measuring the specific conductivity of the effluent from each exchange resin column and electrical means for solving the equation

$$pH = 7 - \log \frac{Kcat}{1.65\ Kan}$$

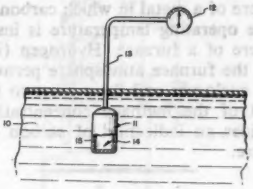
and indicating the pH value of the liquid sample.

3,681,026

METHOD AND APPARATUS FOR DETERMINING THE CARBON ACTIVITY OF FLUIDS

Robert B. Holden, Scarsdale, N.Y., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 4, 1968, Ser. No. 781,175
Int. Cl. G01n *7/12, 31/12, 33/20*
U.S. Cl. 23—230 R **15 Claims**



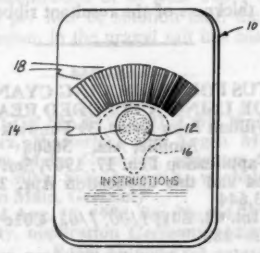
The carbon activity of a fluid of unknown carbon content is determined by bringing the carbon-containing fluid into contact with a hollow, sealed probe the walls of which are made from a material which is impervious to the fluid and in which carbon from the fluid will dissolve and diffuse. The hollow probe contains a gas which will react reversibly with carbon with a concomitant change in the total number of molecules comprising the gas present in the sealed probe. Carbon in the probe wall (present therein at a level reflecting the carbon activity of the fluid being monitored) reacts reversibly with the gas within the probe until equilibrium conditions are attained. Means are provided for determining the total number of molecules of gas contained in the sealed probe which, in turn, is a measure of the carbon activity of the fluid in contact with the sealed probe.

3,681,027

COLORIMETRIC INDICATOR FOR THE DETECTION OF NITROGEN DIOXIDE

Avery B. Smith, Wallingford, Conn., assignor to Resource Control, Inc., West Haven, Conn.

Continuation of abandoned application Ser. No. 692,842, Dec. 22, 1967. This application May 28, 1971, Ser. No. 148,231
Int. Cl. G01n *31/22*
U.S. Cl. 23—232 R **4 Claims**



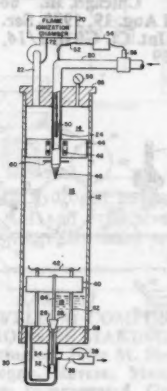
A small, pocket type of "field use" indicator of the colorimetric type for detecting and indicating nitrogen dioxide contamination in an atmosphere, in which a powder compact of diazotizing, coupling and stabilizing agents is mechanically supported in suitable manner to provide a self-contained, one-time indicator unit that is discarded after use.

3,681,028

UNDERWATER GAS DETECTION SYSTEM

Charley Mack Mason, Denton, Tex., assignor to Sun Oil Company (Delaware), Dallas, Tex.

Filed Aug. 31, 1970, Ser. No. 68,285
Int. Cl. B01d *19/00*; G01n *1/24, 33/24*
U.S. Cl. 23—253 R **19 Claims**



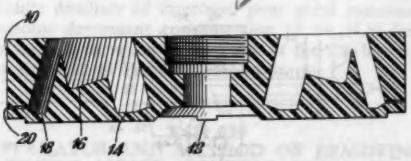
In a hydrocarbon detection system for use in an exploration survey over water covered areas, samples of water are taken, in which hydrocarbon gases may appear in a dissolved state. Removal of dissolved gas from the sample is accomplished by admitting the sample to a chamber, passing it through a fog nozzle, and applying a vacuum to remove the gas from the sample, thus creating fog, liquid, and gas zones in the chamber. Gas is removed from the top and liquid is discharged from the bottom of the chamber by pumps. Valves are located in the liquid entrance line and the de-gassified liquid exit line, and are controlled by liquid level responsive devices. The removed gas is subjected to analysis.

3,681,029

SAMPLE HOLDER AND TRANSFERRING DEVICE FOR A CENTRIFUGE

Stephen I. Shapiro, Scarsdale, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

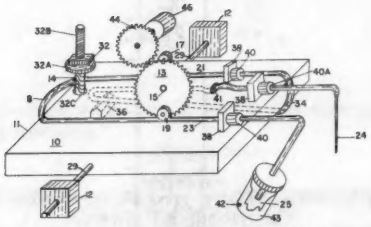
Filed Apr. 13, 1970, Ser. No. 27,506
Int. Cl. G01n *1/10, 21/00, 33/16*; B04b *5/12*
U.S. Cl. 23—259 **5 Claims**



Known rotary photometric analyzers have a series of cuvettes arranged vertically and concentrically around a horizontally rotatable disk so that when the disk is rotated centrifugal force mixes and transfers reagents and samples to the cuvettes. As each cuvette passes a light source the samples are analyzed photometrically by projecting a light beam through the bottom of the cuvette

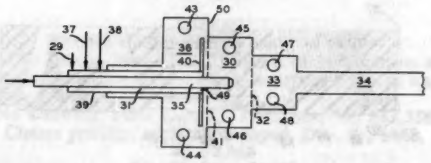
and measuring the absorbence as the beam emerges from the top of the cuvette. In the improvement of this invention the analyzer is provided with a sample holder and transferring device having reagent, sample and transfer chambers disposed in such a geometric configuration that the entire sample is picked up in the reagent and swept into the cuvette.

3,681,030
HAND AUTOMATIC SAMPLER AND DILUTER
Samuel Natelson, 5508 Hyde Park Blvd., Chicago, Ill. 60616
Filed Aug. 19, 1970, Ser. No. 65,146
Int. Cl. G01n *1/14, 31/00*
U.S. Cl. 23—259 **2 Claims**



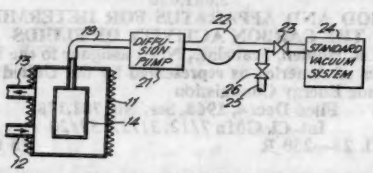
A hand automatic sampler and diluter arrangement operable in any position and independent of gravity, comprising passing a roller over a first section of flexible tubing in order to aspirate a sample by peristalsis. A second roller passes over a second section of tubing of wider diameter to eject the sample plus some diluent. The two sections of tubes are connected, but the peristaltic action through the sections moves in opposite directions. In practice, a single wheel with two rollers on opposite sides serves to alternately pass over one and then the other tubing. The instrument is self-contained, readily portable, and hand operated. A valve arrangement permits the clamping of the tubing near the exit when neither roller is pressing the tubing.

3,681,031
CARBON BLACK REACTOR
Paul H. Johnson, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed June 5, 1969, Ser. No. 830,611
Int. Cl. C09c *1/48*
U.S. Cl. 23—259.5 **3 Claims**



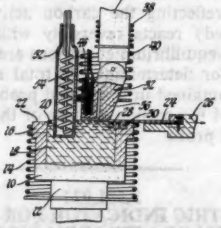
A method and apparatus for introducing combustion gases into a carbon black furnace, the method involving the introduction of the combustion gases at variable velocities to affect the extent of the interaction between the axially-introduced reactants and the combustion gases. The apparatus includes means for varying the introduction velocity of the combustion gases.

3,681,032
CARBON CONTENT ANALYSIS
Geoffrey Long, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed June 9, 1970, Ser. No. 44,727
Claims priority, application Great Britain, June 13, 1969, 30,211/69
Int. Cl. G01n *7/10*
U.S. Cl. 23—254 R **10 Claims**



An enclosure of a metal in which carbon is soluble and mobile at the operating temperature is inserted into the gas atmosphere of a furnace. Hydrogen (in excess) and carbon from the furnace atmosphere permeate to the interior of the enclosure and there react to form methane. Measurement of the methane concentration in the enclosure provides an indication of carbon content in the gas atmosphere.

3,681,033
HORIZONTAL GROWTH OF CRYSTAL RIBBONS
Carl E. Blyell, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 31, 1969, Ser. No. 795,561
The portion of the term of the patent subsequent to Sept. 21, 1988, has been disclaimed
Int. Cl. B01j *17/18*
U.S. Cl. 23—273 SP **3 Claims**

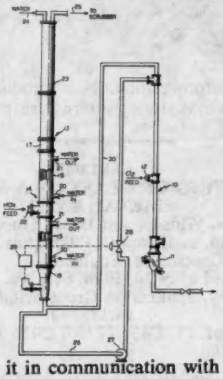


A method and apparatus is described for horizontally pulling crystal ribbons from a melt parallel to the melt surface. The heat of crystallization is selectively removed from one end of a seed crystal by a heat absorbing means perpendicular to the melt surface. Means are provided to appropriately suppress net loss of the heat of fusion from the balance of the seed in contact with the melt to control the thickness of the resultant ribbon.

3,681,034
APPARATUS FOR PRODUCING CYANOGEN CHLORIDE USING A FLOODED REACTION
William John Evers, 39 Fenwick Road, Mobile, Ala. 36608
Original application Feb. 17, 1967, Ser. No. 616,875. Divided and this application Apr. 29, 1970, Ser. No. 43,644
Int. Cl. B01j *1/00, 7/02;* C01c *3/00*
U.S. Cl. 23—283 **2 Claims**

An apparatus for reacting hydrogen cyanide and chloride to produce cyanogen chloride. A reaction and scrubbing column has a packing-free reaction section in the lower part thereof having at least one inner tube and an outer tube therearound defining a cooling fluid circulating chamber between the inner and outer tubes, the outer

tube having a fluid inlet and a fluid outlet therein. The reaction section has a feed inlet for hydrogen cyanide intermediate the ends thereof, a packed scrubbing section next above the reaction section and a water inlet means and a cyanogen chloride outlet means at the top thereof. A chlorine-cyanogen chloride line opens into the bottom of the reaction section and is adapted to extend to the top of a stripping column. An outlet line extending out of the bottom of the reaction section and is



adapted to place it in communication with the top of the stripping column. Pump means is provided in the outlet line and valve means are provided in the outlet line downsteam of the pump means. Pressure sensing control means is connected between the valve means and the bottom of the reaction column for sensing the head of liquid reaction medium in the reaction column and controlling the valve means for maintaining the head to keep the reaction section full of reaction medium.

3,681,035

PROCESS FOR PREPARING ALPHA AMMONIUM URANOUS PENTAFLUORIDE

Murray Selman, Pittsburgh, Pa., and Christian A. Wamser, Berkeley Heights, and John E. Wilkalis, Morris Plains, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 824,357, Apr. 29, 1969, which is a continuation of application Ser. No. 683,022, Nov. 14, 1967. This application Oct. 1, 1969, Ser. No. 862,935

Int. Cl. C01g *43/00, 43/06*

U.S. Cl. 23—346 **3 Claims**

Process for preparing NH_4UF_5 in alpha crystalline form by adding to an aqueous acidic solution of a uranyl salt containing cupric ions, chloride ions and ammonium ions, hydrogen fluoride and hydroxylamine, the hydroxylamine being added in amounts and time of addition so as to maintain a concentration of at least about 0.07 mol of hydroxylamine per liter of solution until the major portion of the uranium in the uranyl salt has been converted to NH_4UF_5.

3,681,036

METHOD OF MAKING SILICON HALIDES

Rudolf Schwarz, Wasserlos, and Eugen Meyer-Simon, Frankfurt am Main, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

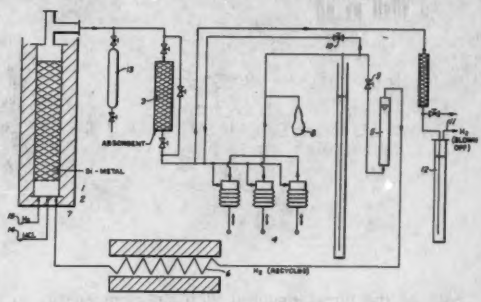
Filed Aug. 18, 1970, Ser. No. 64,707

Claims priority, application Germany, Aug. 20, 1969, P 19 42 280.1

Int. Cl. C01b *33/08, 33/02*

U.S. Cl. 23—366 **10 Claims**

Silicon halides are formed in a continuous process by reacting silicon or a silicon-containing compound with hydrogen halide at a temperature between 350 and 1200° C. The silicon halide is then recovered and the hydrogen formed in the reaction is recycled in an amount to provide a ratio of partial pressures in the re-



action mixture between hydrogen halide and hydrogen in the range between 1:1 and 1:50 at a predetermined reaction temperature within the stated range.

3,681,037

TITANIUM-BERYLLIUM COMPOSITES AND METHODS OF MAKING

Stanley Abkowitz, Lexington, John M. Sierigiej, Wayland, and Ronald D. Regan, Revere, Mass., assignors to Nuclear Components Incorporated, Great Barrington, Mass.

No Drawing. Filed Apr. 21, 1969, Ser. No. 818,055

Int. Cl. B22f *1/00*

U.S. Cl. 29—182.2 **11 Claims**

Composites of titanium and beryllium are formed which have a high modulus of elasticity, low density and useful ductility. Titanium-beryllium composites in accordance with this invention comprise from 90 to 40% titanium and from 10 to 60% by volume beryllium. The composites are formed by consolidation of irregular shaped particles of titanium and beryllium under conditions which prevent alloying or compounding of the two metals.

ERRATUM

For Class 29—195 see:
Patent No. 3,681,019

3,681,038

MIDDLE DISTILLATE

Alexander Gaydasch, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Mar. 9, 1970, Ser. No. 17,860

Int. Cl. C10l *1/18*

U.S. Cl. 44—66 **6 Claims**

Middle distillate of improved pour point containing a pour-point depressant concentration of an N,N-dialkylricinoleamide in which at least one of the alkyls contains from about 12 to about 26 carbon atoms.

3,681,039

APPARATUS AND METHOD OF REMOVING EXCESS LIQUID COATING FROM GLASS FILAMENTS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation

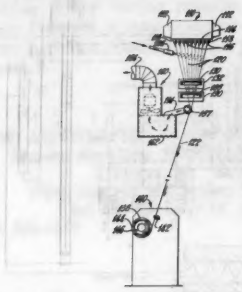
Filed June 9, 1970, Ser. No. 44,822

Int. Cl. C03c *25/02*

U.S. Cl. 65—3 **6 Claims**

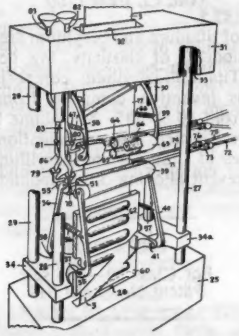
Apparatus for and method of processing linear material having a coating substance thereon that includes advancing the linear material to a hollow gathering member and

providing in the opening of the member a zone of fluid media such as air moving generally transversely of the



path of the linear material with sufficient energy to remove unwanted coating substance from the linear material.

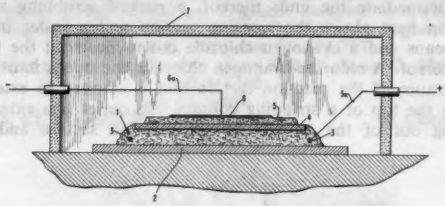
3,681,040
PROCESS AND APPARATUS FOR TEMPERING OF GLASS BY ELECTROCHEMICAL ION EXCHANGE
Jean-Marc Pierre-dit-Mery, Serquigny, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France
Continuation of application Ser. No. 536,954, Mar. 22, 1966. This application July 10, 1970, Ser. No. 54,019
Claims priority, application France, Mar. 26, 1965, 10,859
Int. Cl. C03c *21/00*
U.S. Cl. 65—30 **19 Claims**



Process and apparatus for the surface tempering of both sides of a glass article by electro-chemical ion exchange including mounting a positive pole of a D.C. voltage to baths of molten salts such as potassium nitrate on both sides of the article, connecting the negative pole to a portion of the glass article outside of the molten bath, maintaining the glass article at a temperature to place the glass article in an electrically conductive state, and applying the voltage for a time period sufficient to attain ion exchange on bath surfaces of the glass article.

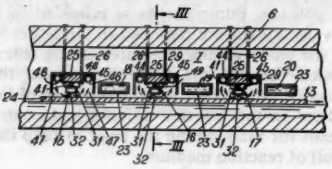
3,681,041
IONICALLY MODIFIED GLASS BY ELECTRIC FIELD IMPACTION
Guy d'Huart, Versailles, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France
Filed Mar. 3, 1969, Ser. No. 803,537
Claims priority, application France, Mar. 4, 1968, 142,178
Int. Cl. C03c *15/00, 21/00;* B01d *59/40*
U.S. Cl. 65—30 **17 Claims**

Glass is strengthened by the ionic interchange of a smaller for a larger ion at a temperature above the strain point and by hot contact. The smaller ion is then displaced by a larger ion, at a temperature below the strain



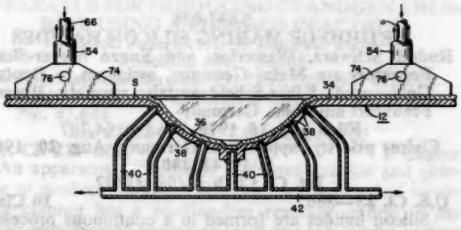
point, by electromigration. New products having highly distinctive internal stress patterns are produced.

3,681,042
COATING OF GLASS ON A MOLTEN METAL BATH
Alan Edwards, Widnes, and David Gordon Loukes, Prescot, England, assignors to Pilkington Brothers Limited, Liverpool, Lancashire, England
Filed May 26, 1970, Ser. No. 40,600
Claims priority, application Great Britain, Mar. 24, 1970, 14,255/70
Int. Cl. C03c *17/06;* C03b *18/00*
U.S. Cl. 65—60 **16 Claims**



A surface of float glass is coated by vaporising a coating material, for example a coating metal, and entraining the vapour in a stream of hot carrier gas, for example nitrogen or argon. The gas-borne coating material is directed towards the glass surface to be coated which surface is at a coating-receptive temperature. A duct for conducting the vapour extends into a tank in which the glass is being formed. The duct includes a trough, located within the tank for confining a molten body of coating material. The duct is heated to a temperature sufficient to release vapour from the molten body.

3,681,043
FORMING VESSELS FROM GREEN GLASS-CERAMIC SHEETS
Lewis L. Bognar, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Apr. 8, 1970, Ser. No. 26,492
Int. Cl. C03b *29/00, 21/00*
U.S. Cl. 65—33 **4 Claims**



Green glass sheets which are crystallizable into a glass-ceramic upon the application of heat, are heat-softened

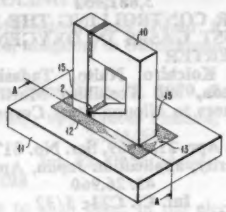
and vacuum-formed into vessel shaped articles, through a controlled application of radiant heat which is applied at such a rate so as to heat soften and form the green glass sheet before the sheet has an opportunity to nucleate and crystallize into a rigid glass-ceramic material.

3,681,044

METHOD OF MANUFACTURING FERRITE RECORDING HEADS WITH A MULTIPURPOSE DEVITRIFIABLE GLASS

James F. Ruszczyk and Duane R. Secrist, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 6, 1970, Ser. No. 52,352
Int. Cl. C03c *27/00*
U.S. Cl. 65—33 **6 Claims**



A glassing method for joining a ferrite recording head to a ceramic slider by the steps of filling the recording head gap with a devitrifiable glass and crystallizing the glass so as to effectively raise its softening point and hardness; adding a second glass material to the slider area to which the head is to be joined, placing the head in contact with the slider, and heating the second glass material to a temperature sufficient to join the head to the slider. The slider glass material is preferably also the same devitrifiable glass material as used with the head, and may be heated to the devitrifying temperature. This latter scheme allows one glass system to be employed for multistep processes at one common low temperature. Reduced corrosion and improved wear characteristics are realized.

3,681,045

USE OF META-SUBSTITUTED ALKYL OR ALKENYL BENZOIC ACID ESTERS AS SELECTIVE POST-EMERGENCE CRABGRASS HERBICIDES

Stanley T. D. Gough, Raritan, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed July 29, 1969, Ser. No. 845,915
Int. Cl. A01n *9/24*
U.S. Cl. 71—107 **1 Claim**

Alkyl, cycloalkyl, alkenyl, alkynyl, and hydroxyalkyl esters of meta-substituted alkyl or alkenyl benzoic acid form a new class of selective herbicides. These meta-substituted alkyl or alkenyl benzoic acid esters and herbicidal compositions containing these esters are highly effective as post-emergence contact crabgrass herbicides.

3,681,046

METHOD OF SULPHATIZING NON-FERROUS METALS IN FINELY GROUND IRON OR OTHER ORES

Petri Baldur Bryk and Jorma Bruno Honkasalo, Helsinki, and Rolf Einar Malmstrom, Pori, Finland, assignors to Outokumpu Oy, Outokumpu, Finland

No Drawing. Continuation-in-part of application Ser. No. 605,153, Dec. 28, 1966. This application Oct. 7, 1969, Ser. No. 864,555
Int. Cl. C21b *1/02*; C22b *1/10*
U.S. Cl. 75—1 **1 Claim**

A method of sulphatizing non-ferrous metals present as impurities in iron or other ore. In a fluidized bed furnace finely ground oxidic material containing copper, cobalt, nickel, zinc, etc. is mixed with a predetermined amount of sulphidic raw material. Combustion produces a condition of heat equilibrium favorable to sulphatization and the impurities are removed as soluble sulphates.

3,681,047

PROCESS FOR BENEFICIATING ILMENITE ORE

Langtry E. Lynd, North Plainfield, Arnold N. Nilsen, Freehold, and Louis E. MacCardle, South Belmar, N.J., assignors to N. L. Industries, Inc.

No Drawing. Filed Nov. 24, 1969, Ser. No. 879,595
Int. Cl. C22b *3/00*
U.S. Cl. 75—1 **2 Claims**

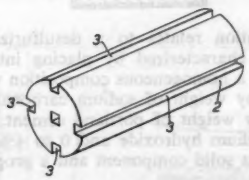
A titanium dioxide concentrate suitable for use as chlorination feed material is produced by an oxidation-leaching process wherein the metallic iron is an upgraded metallized ilmenite hereinafter referred to as a metallized ore concentrate, is leached out of the metallized concentrate by vigorously agitating the latter in an aqueous solution containing ferrous and ferric ions and in the presence of air or oxygen whereby the metallic iron is oxidized to soluble ferrous iron which is washed out of the discrete particles of metallized ore concentrate with minimal loss of TiO_2 values and thereafter oxidized to form solid particulate iron oxide which is separated from the residual TiO_2 concentrate by filtration. The process may be a batch type operation but is preferably a continuous operation wherein the filtrate containing ferrous or ferric ions is recovered and recycled in whole or in part to leach additional metallized ore concentrate.

3,681,048

STEELMAKING PROCESS USING IRON SCRAP BUNDLES

Akemasa Otani, 4, 2-chome, Asakusa Hashiba-cho, Taito-ku, Tokyo, Japan

Continuation-in-part of application Ser. No. 581,288, Sept. 22, 1966. This application June 19, 1967, Ser. No. 646,915
Claims priority, application Japan, June 27, 1966, 41/41,422
Int. Cl. C21b *1/08, 1/30*
U.S. Cl. 75—44 S **5 Claims**



An improved steelmaking process using iron scrap bundles comprising, forming the bundles with grooves, depressions, or holes, charging the bundles into a steelmaking furnace, and melting the bundles.

3,681,049

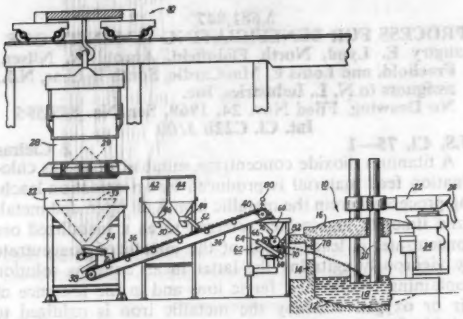
METHOD OF CHARGING ELECTRIC ARC STEELMAKING FURNACE

Juan Celada, Monterrey, Nuevo Leon, Mexico, assignor to Fierro Esponja, S.A., Monterrey, Nuevo Leon, Mexico

Filed July 17, 1969, Ser. No. 842,617
Claims priority, application Mexico, Aug. 16, 1968, 105,284
Int. Cl. C21c *5/52*; C22b *9/00*; H05b *31/04*
U.S. Cl. 75—12 **6 Claims**

A method of continuously charging an electric arc steelmaking furnace is disclosed which generates an opaque

atmosphere in the furnace capable of reducing substantially the transmittance of radiant heat from the arc to the refractory lining of the furnace thereby decreasing the rate at which the furnace lining deteriorates. The opaque atmosphere is generated by including in the charge a proportion of very fine particles capable of being suspended in the furnace atmosphere to form an opaque dust suspension therein. The charge is forcibly and laterally injected into the furnace to generate the dust suspension therein. The dust-generating particles should desirably be of less than 140 mesh size. Charging apparatus for injecting the particulate charge into the furnace is also disclosed.

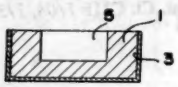


3,681,050

AGENT FOR DESULFURIZING MOLTEN PIG IRON

Kazufusa Ueki, Yamato-Takada, Japan, assignor to Aikoh Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1970, Ser. No. 67,356
Claims priority, application Japan, Mar. 27, 1970, 45/25,237
Int. Cl. C21c *7/02*
U.S. Cl. 75—58 **1 Claim**



This invention relates to a desulfurizing agent for molten iron characterized by placing into a container a molding of a homogeneous composition which contains 53 to 58% by weight of sodium carbonate (soda ash), 5 to 18% by weight of portland cement, 3 to 10% by weight of sodium hydroxide and 0 to 4% by weight of water glass as solid component and a proper quantity of water.

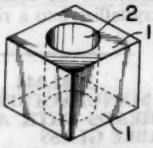
3,681,051

DESULFURIZING AGENT FOR MOLTEN PIG IRON

Masaru Takashima, Tokyo, Masao Saito, Nikko-shi, Shigeru Matsuyama, Utsunomiya-shi, and Kazufusa Ueki, Sano-shi, Japan, assignors to Aikoh Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1969, Ser. No. 881,953
Claims priority, application Japan, Aug. 13, 1969, 44/63,572
Int. Cl. C21c *7/02*
U.S. Cl. 75—58 **1 Claim**

A desulfurizing agent for molten pig iron in the form of moldings of a homogeneous composition consisting of 60 to 85% by weight of soda ash (anhydrous sodium carbonate), 3 to 25% by weight of portland cement, and also 0 to 10% by weight of water glass, 0 to 5% by weight of borax, 0 to 5% by weight of sodium chloride, 0 to 10% by weight of a calcium-containing substance, 0 to 5% by weight of a carbonaceous substance, and 0 to 10% by weight of iron powder, containing also 7 to 15%



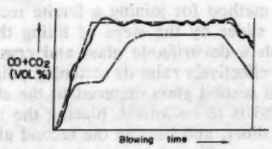
by weight of water, with an apparent specific gravity of 1.3 to 2.5, said moldings having one or more through holes or grooves each.

3,681,052

METHOD FOR CONTROLLING THE TREATMENT OF EXHAUST GASES IN OXYGEN TOP-BLOWING CONVERTER

Norito Iwao, Koichiro Naito, Tadashi Kawaguchi, Minoru Maeda, and Toshihito Morita, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 21, 1969, Ser. No. 817,902
Claims priority, application Japan, Apr. 22, 1968, 43/26,960
Int. Cl. C21c *5/32*
U.S. Cl. 75—60 **1 Claim**



A method for controlling the treatment of exhaust gases produced in an oxygen top-blowing converter. The exhaust gases are collected from the converter in a gas collection apparatus including a gas flow volume adjusting means and a skirt movable close to the top of the converter while leaving a space between the skirt and the converter due to the buildup of a slag and the like. The composition of the collected gases flowing through the collection apparatus is continuously analyzed and compared with a predetermined optimum composition. The gas flow volume adjusting means is then adjusted to vary the volume of gas flow to draw in more or less air through the space between the skirt and the converter to change the gas composition so that it coincides with the predetermined optimum composition. The carbon content of the melt can also be determined by additionally determining the volume of the $CO+CO_2$ in the exhaust gases and calculating therefrom the rate of decarburization of the steel, and comparing the rate of decarburization near the end of the blowing with data from previous heats to determine the carbon content of the melt.

3,681,053

USE OF HIGH-SILICON AS THE REDUCTANT FOR THE METALLOTHERMIC PRODUCTION OF MAGNESIUM

Julian M. Avery, 47 Old Orchard Road, Chestnut Hill, Mass. 02132

No Drawing. Continuation-in-part of application Ser. No. 796,214, Feb. 3, 1969, which is a continuation-in-part of application Ser. No. 648,856, June 27, 1967. This application Apr. 6, 1970, Ser. No. 26,117
The portion of the term of the patent subsequent to Feb. 23, 1988, has been disclaimed
Int. Cl. C22b *45/00*
U.S. Cl. 75—67 **2 Claims**

High-silicon is used as the reductant for the production of magnesium from magnesium oxide at elevated tem-

perature in the presence of molten oxidic slag. Silicon metal or a silicon alloy, containing at least 80 percent silicon and no more than 20 percent aluminum and a minor amount of iron or other non-reactive components, is used as the high-silicon reducing agent. In order to permit operation at or near atmospheric pressure and to decrease the silicon content of the magnesium product, preferably inert gas is provided in the vapor space of the reaction-condensation zone.

3,681,054

METHOD FOR SELECTIVE REDUCTION OF A PAIR OF METAL SALTS CLOSELY ADJACENT IN THE ELECTROMOTIVE SERIES FROM SOLUTION IN THE FORM OF METAL POWDER WITH THE AID OF A REDUCING GAS

Rolf Einar Malmstrom and Tapio Kalevi Tuominen, Pori, Finland, assignors to Outokumpu Oy, Outokumpu, Finland

No Drawing. Filed June 29, 1970, Ser. No. 50,993

Claims priority, application Finland, July 9, 1969, 2,044/69

Int. Cl. C22b *23/04*

U.S. Cl. 75—108 **7 Claims**

Metals close to each other in the electromotive series are separated from a solution by forming halide complexes of the metals to be reduced, adjusting the pH so acidic that only the most unnoble metal can be reduced by introducing a reducing agent at elevated temperature and simultaneously optionally neutralizing the acid formed. The reduced metal precipitate is recovered and then the pH is raised until the second least noble metal starts to be reduced, etc. Chloride is preferably used as the halide.

3,681,055

COPPER RECOVERY PROCESS

Paul A. Little and Lloyd B. Lyon, Salt Lake City, Utah, assignors to American Refining Limited, Salt Lake City, Utah

Filed Apr. 21, 1969, Ser. No. 817,660

Int. Cl. C22b *15/12*

U.S. Cl. 75—108 **14 Claims**

Copper values are extracted from low-grade materials with an ammoniacal aqueous solution of ammonium carbonate to produce an aqueous solution of copper ammonium carbonate complex. The solution is treated by electrolysis, evaporation, or metal catalysis to decompose the copper ammonium complex and produce a copper carbonate precipitate. The copper carbonate precipitate is recovered and reduced to metallic copper.

3,681,056

PROCESS FOR WINNING METALS

Lloyd B. Lyon and Paul A. Little, Salt Lake City, Utah, assignors to American Refining Limited, Salt Lake City, Utah

Filed Apr. 21, 1969, Ser. No. 818,011

Int. Cl. C22b *15/12*

U.S. Cl. 75—108 **7 Claims**

Metal values are brought into aqueous solution by milling and/or leaching techniques. The resulting metal-bearing solution is contacted with polysaccharide complexing agents to complex the metal values carried thereby. Metal-organic complexes are recovered and are treated by smelting and/or electrolytic techniques to recover substantially pure metals.

3,681,057

ALUMINUM KILLED-STEEL

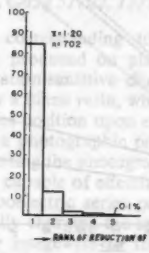
Kiminari Kawakami and Shizunao Yamagishi, Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed June 10, 1970, Ser. No. 45,108

Claims priority, application Japan, June 12, 1969, 44/45,748

Int. Cl. C22c *39/20*

U.S. Cl. 75—124 **1 Claim**



An Al-killed steel consisting of a Si-Ai-Nb system that can be produced with a good yield and has excellent surface quality for providing a line pipe tensile strength of more than 60 kg./mm.², good low temperature toughness and distinguished weldability.

3,681,058

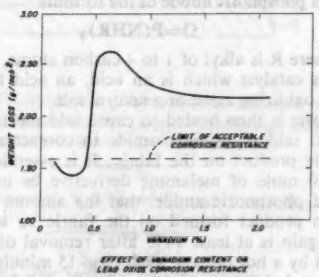
LOW-NICKEL VALVE STEEL

Edward J. Dulis, Mount Lebanon Township, Allegheny County, August Kasak, Upper St. Clair Township, Allegheny County, and William Stasko, Munhall Borough, Pa., assignors to Crucible Inc., Pittsburgh, Pa.

Filed Nov. 12, 1969, Ser. No. 875,851

Int. Cl. C22c *39/20*

U.S. Cl. 75—128 A **2 Claims**



EFFECT OF VANADIUM CONTENT ON LEAD OXIDE CORROSION RESISTANCE

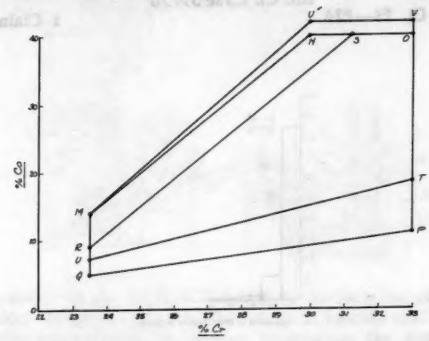
This is an austenitic stainless steel, particularly suited for use in the manufacture of internal combustion engine valves consisting essentially of, in weight percent, .45 to .57 carbon, 7 to 12 manganese, .25 max. silicon, 17 to 22 and preferably 18 to 21.5 chromium, 1 to 4 nickel, .40 to .60 nitrogen, total additional carbide-forming element content of 1.5 to 4.5 with vanadium up to .45, and the balance iron. Preferably, silicon is .15% max. The steel is characterized by good elevated-temperature strength and lead-oxide corrosion resistance.

3,681,059

NICKEL-CHROMIUM ALLOY FOR REFORMER TUBES

Stuart Walter Ker Shaw, Coldfield, and Peter John Penrice, Birmingham, England, assignors to The International Nickel Company, Inc.

Filed Dec. 12, 1969, Ser. No. 884,676
Claims priority, application Great Britain, Dec. 13, 1968, 59,479/68
Int. Cl. C22c *19/00*
U.S. Cl. 75—134 F 5 Claims



Carbide-strengthened alloy containing nickel, chromium, molybdenum and/or tungsten, cobalt and niobium provides combination of high stress-rupture strength at elevated temperatures, resistance to corrosion by combustion products of hydrocarbon fuels, good weldability and good castability and is particularly satisfactory for use in production of gas plant apparatus, such as reformer tubes.

3,681,060

PREPARATION OF FLAME-RETARDANT FABRICS

Stephen B. Sello, Cedar Grove, N.J., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

No Drawing. Filed Aug. 5, 1970, Ser. No. 61,490
Int. Cl. C09k *3/28*; C09d *5/18*
U.S. Cl. 117—137 14 Claims

Cellulose-containing fabrics are rendered durably flame retardant without undue physical strength deterioration or excessive stiffening by applying to said fabric

(a) a melamine derivative prepared by reacting melamine with formaldehyde or formaldehyde and an alkanol,

(b) a phosphoric amide of the formula

$$O=P(NHR)_3$$

where R is alkyl of 1 to 4 carbon atoms, and

(c) a catalyst which is an acid, an acid forming salt, an oxidizing agent or a neutral salt.

The fabric is then heated to cause said melamine derivative and said phosphoric amide to coreact and form an insoluble product on the fabric. It is essential that more than 1.0 mole of melamine derivative be used for each mole of phosphoric amide, that the amount of insoluble reaction product formed on the fabric be such that the weight gain is at least 14% after removal of any soluble product by a hot process wash (e.g. 15 minutes at 90° C.) and that the nitrogen to phosphorus weight ratio of the insoluble product be at least 5.0 to 1.

3,681,061

FULLY DENSE CONSOLIDATED-POWDER SUPERALLOYS

Stewart G. Fletcher, Latrobe, Pa., assignor to Latrobe Steel Company, Latrobe, Pa.

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,861
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 6 Claims

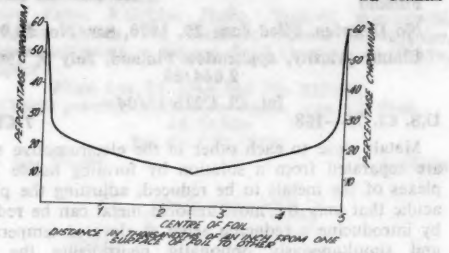
Superalloys formed of consolidated powder, which are fully dense and have a composition by weight consisting essentially of about 0.08 to 0.20 percent carbon, about 9 to 34 percent cobalt, about 8 to 17 percent chromium, about 2.5 to 6 percent aluminum, about 1.7 to 5 percent titanium, about 6.5 to 14 percent tungsten and the balance nickel together with minor alloying ingredients and incidental impurities, are characterized by being readily workable as compared to conventional casting alloys of the same chemical composition which are too brittle and have too little ductility to hot work.

3,681,062

METHOD OF PRODUCING A METALLIC LENGTH

Albert Edward Jackson, Gwernaffield Mold, England, assignor to John Summers & Sons Limited, Deeside Flintshire, England

Filed July 8, 1969, Ser. No. 839,847
Claims priority, application Great Britain, July 18, 1968, 34,281/68
Int. Cl. B22f *7/00*
U.S. Cl. 75—208 CS 11 Claims



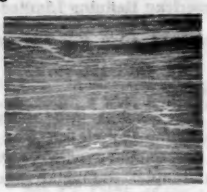
A method is provided for producing a continuous sintered ferrous metal length having at least one metallic chromium-containing surface from powdered metallic materials. Unsupported ferrous metal powder is passed through the nip of a first pair of compaction rollers to produce a continuous length of ferrous metal. At least one surface of the length of ferrous metal is coated with a metallic chromium-containing powder and the metallic chromium-containing powder is compacted thereto by passing the coated length through the nip of a second pair of compaction rollers. Thereafter the coated length of ferrous metal is heat treated to effect sintering thereof in the presence of a halogen-containing material which, during the heat treating, promotes the fusion of the metallic chromium into the coated surface of the length of ferrous metal. The method is especially useful in producing a length of a stainless iron, or a length of stainless steel foil, which is corrosion resistant throughout.

3,681,063

METHOD OF MAKING METAL FIBERS

Richard W. Douglass, Needham, Mass., assignor to National Research Corporation, Newton, Mass.

Original application Mar. 29, 1967, Ser. No. 626,773. Divided and this application Mar. 13, 1969, Ser. No. 869,404
Int. Cl. B22f *7/00*; C22c *1/04, 9/00*
U.S. Cl. 75—208 4 Claims



Hard metal powder compacts are sintered and impregnated with a softer metal. The compacts are reduced to

rod, wire or sheet. In the process fine fibers of the hard metal powder are formed.

3,681,064

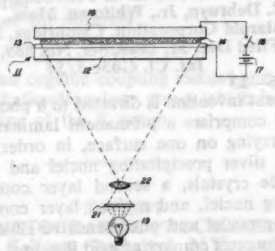
PHOTOELECTROPHORETIC IMAGING PROCESS EMPLOYING MULTICOMPONENT ELECTRICALLY PHOTOSENSITIVE PARTICLES

Shu-Hsiung Yeh, Iowa City, Iowa, assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of application Ser. No. 748,884, May 6, 1968, which is a division of application Ser. No. 518,041, Jan. 3, 1966, now Patent No. 3,383,993, which in turn is a continuation-in-part of application Ser. No. 384,680, July 23, 1964, now abandoned. This application Feb. 3, 1971, Ser. No. 112,367

Int. Cl. G03g *13/22*

U.S. Cl. 96—1 R 6 Claims



A photoelectrophoretic imaging system is described which includes at least two electrodes, at least one of which is at least partially transparent. A thin layer of a suspension of particles in a liquid carrier is interpositioned between the electrodes. At least one of the electrodes has a blocking surface facing the suspension. Means are included to impose an electric field across the suspension between the electrodes and to expose the suspension to an image with electromagnetic radiation through the transparent electrode. This apparatus is suitable for preparing both monochromatic and polychromatic copies of originals by particle migration through the suspension.

3,681,065

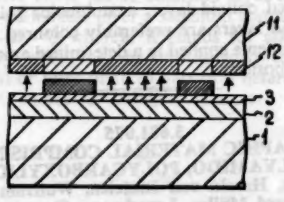
DYE TRANSFER COLOR ELECTROPHOTOGRAPHY

Masamichi Sato, Seiji Matsumoto, and Satoru Honjo, all of Fuji Photo Film Research Lab., Asaka, Saitama, Tokyo, Japan

Filed June 12, 1967, Ser. No. 645,311

Int. Cl. G03g *13/22*

U.S. Cl. 96—1.2 6 Claims



A method of obtaining a color image which comprises, forming an image with an imaging material on a photoconductive electrophotographic member, the member having a surface comprised of a hydrophilic film-forming material which can absorb a dye dissolved in a polar solvent thereof, fixing the image, placing the image-bearing member in contact with a dye solution whereby the dye is absorbed in the surface, and then bringing the dye absorbed member into contact with a dye-receiving member whereby the dye is transferred onto the receiving member, thus obtaining a dye image, subject to the provision that the imaging material prevents the absorption of dye to the surface.

3,681,066

PROCESS WHEREBY A DIAZO-CONTAINING MATERIAL EXHIBITS AN IMAGEWISE CHANGE IN TRIBOELECTRIC CHARGING PROPERTIES

Hugh G. McGuckin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 30, 1970, Ser. No. 51,350

Int. Cl. G03g *51/02, 13/14, 13/22*

U.S. Cl. 96—1 R 20 Claims

Visible images corresponding to latent electrostatic charge images are produced on photographic layers incorporating a radiation-sensitive diazo material, such as a diazonium salt or a diazo resin, which exhibits a change in triboelectric series position upon exposure to activating rays, by means of a photographic process which includes (a) imagewise exposing the photographic layer to electromagnetic radiation capable of effecting an exposed imagewise change in triboelectric series position, (b) differentially triboelectrically charging the surface of the exposed photographic layer imagewise to form a latent electrostatic image thereon and (c) developing the latent electrostatic image by contacting the charge surface with a developer composition containing electrostatically attractable toner particles, to form a pattern of the toner particles on the charged surface corresponding to the nonexposed or the exposed regions.

3,681,067

CdS-CHALCOGEN TERNARY COMPOUND MIXTURE AS PHOTOCONDUCTIVE MATERIAL IN AN ELECTROPHOTOGRAPHIC MEMBER

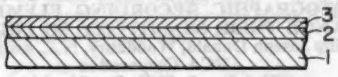
Hiroshi Hanada, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1970, Ser. No. 61,548

Claims priority, application Japan, Aug. 13, 1969, 44/64,363

Int. Cl. G03g *5/08, 7/00*

U.S. Cl. 96—1.5 3 Claims



An electrophotographic photosensitive member which comprises a photoconductive layer comprising CdS and a chalcogen ternary compound of the formula

X_4YZ_6

where X is Zn or Cd, Y is Si or Ge and Z is S, Se or Te.

3,681,068

ORGANIC PHOTOCONDUCTORS

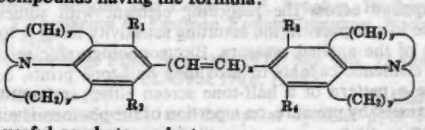
Arthur Lee Johnson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 25, 1971, Ser. No. 119,051

Int. Cl. C03g *5/00, 7/00*

U.S. Cl. 96—1.5 4 Claims

Compounds having the formula:



are useful as photoconductors.

3,681,069

BINDER PLATE FOR USE IN XEROGRAPHY AND PROCESS THEREFOR

Raymond W. McNamee, Jr., Horsham, Frank J. Glavis, Rydal, and Anthony E. Schiavone, Hatboro, Pa., assignors to Rohm & Haas Company, Philadelphia, Pa.

No Drawing. Filed Oct. 28, 1966, Ser. No. 590,209
Int. Cl. C08d *13/16*; C09d *5/02*; G03g *5/00*
U.S. Cl. 96—1.5 6 Claims

An electrophotographic plate and method of imaging the same. The binder used for the inorganic photoconductor consists essentially of a water-insoluble and electrically insulating evaporation residue of an aqueous solution of a water-soluble salt of a volatile base of either ammonia or a volatile amine and a resinous copolymer of

(1) at least 10% by weight of one or more alkyl acrylates in which the alkyl group has from 1–16 carbon atoms;

(2) from 10–25% by weight of either acrylic or methacrylic acid or a mixture thereof; and

(3) at least 10% by weight of at least one hardening comonomer; said copolymer being free of permanent ionic residues and having a T_1 value of −10° C. to 20° C.

3,681,070

ELECTROCONDUCTIVE LAYERS OF WATER INSOLUBLE COPOLYMERS OF STYRENE AND SULFONIC ACID OR SALTS FOR USE IN RECORDING MATERIALS

Daniel Maurice Timmerman and Karel Eugeen Verhille, Mortsel, and August Jean Van Paesschen, Antwerp, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed June 20, 1969, Ser. No. 835,258
Claims priority, application Great Britain, June 21, 1968, 29,801/68
Int. Cl. G03c *1/78*; G03g *5/02*
U.S. Cl. 96—1.5 9 Claims

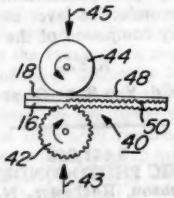
An electroconductive layer for sheet material having a surface resistivity lower than 10^{11} ohms/sq. cm. and formed of a copolymer of styrene and styrene sulphonic acid or acid salt having a styrene sulphonic acid content within the range of about 17.5–35 mole percent.

3,681,071

METHOD OF PRESSURE TREATING ELECTROPHOTOGRAPHIC RECORDING ELEMENTS TO CHANGE THEIR SENSITIVITY TO LIGHT

Philip Joseph Donald, Woodbury, N.J., assignor to RCA Corporation

Filed Jan. 2, 1970, Ser. No. 202
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.8 4 Claims



The sensitivity of an electrophotographic recording element, comprising a substrate and a photoconductive layer thereon, is changed by a method wherein pressure is applied across the recording element with sufficient force to compress it, the resulting sensitivity being a function of the applied pressure. Electrophotographic recording elements, capable of providing half-tone prints, comprise a pattern of a half-tone screen either embossed or impressed by pressure, on a portion of the photoconductive layer.

3,681,072

PERMANENT LAMINATE PHOTOGRAPHIC FILM

Frank E. Debruyn, Jr., Whitman, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1969, Ser. No. 889,467
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 20 Claims

The present invention is directed to a photographic film unit which comprises a permanent laminate including a support carrying on one surface photosensitive silver halide crystals and silver precipitating nuclei and a layer comprising silver precipitating nuclei; and processes employing said film unit.

3,681,073

PERMANENT LAMINATE PHOTOGRAPHIC PRODUCTS AND PROCESSES

Frank E. Debruyn, Jr., Whitman, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1969, Ser. No. 889,482
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 19 Claims

The present invention is directed to a photographic film unit which comprises a permanent laminate including a support carrying on one surface, in order, a first layer comprising silver precipitating nuclei and photosensitive silver halide crystals, a second layer comprising silver precipitating nuclei, and a third layer comprising silver precipitating nuclei and photosensitive silver halide crystals; and processes employing said film unit.

3,681,074

PRODUCTION OF COLOURED COLLOID PATTERNS

Albert Lucien Poot, Kontich, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed June 30, 1970, Ser. No. 51,335
Claims priority, application Great Britain, July 21, 1969, 36,580/69
Int. Cl. G03c *5/00*, *1/58*
U.S. Cl. 96—35 30 Claims

Coloured colloid patterns are produced by means of colored hydrophilic colloid layers containing a diazonium compound which by exposure to activating electromagnetic radiation decomposes to give products providing a decrease in hardenability of a colloid of said layers.

To produce a multicolour print, differently coloured hydrophilic colloid layers containing said diazonium compound are used, such layers being transferred successively from a temporary support to a common permanent support and exposed in registration building up after treatment with a hardening agent for the colloid and washoff of the exposed non-hardened portions of each differently coloured colloid layer, a multicolor print.

The colloid layers are preferably coloured with water-insoluble pigments applied in a determined amount in their coating compositions.

3,681,075

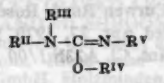
PHOTOGRAPHIC MATERIAL COMPRISING ARYLENE POLYAMIDO, POLYCARBOXYLIC ACIDS

Erwin Ranz, Harald von Rintelen, Wolfram Neumann, and Gerhard Müller, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 2, 1970, Ser. No. 86,278
Claims priority, application Germany, Nov. 6, 1969, P 19 55 900.3; Dec. 6. 1969, P 19 61 373.1
Int. Cl. G03c *1/72*
U.S. Cl. 96—90 R 1 Claim

Light-sensitive arylene polyamido, polycarboxylic acids in photographic layers can be converted to light-sensitive cyclic polyimides which turn dark upon exposure. The

conversion is accelerated by isourea derivatives having the formula:



3,681,076

PHOTOGRAPHIC SILVER HALIDE EMULSIONS CONTAINING COUPLERS WITH FLUORO-ALIPHATICSULFONYLOXY GROUPS

Ivan H. Skoog, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed June 10, 1970, Ser. No. 45,203
Int. Cl. G03c 1/40
U.S. Cl. 96—100 8 Claims

A coupler of the formula

R—X

wherein R is an organic coupling radical and wherein X is a fluoroaliphaticsulfonyloxy group which is bonded to an aromatic ring of the R group.

3,681,077

PHOTOGRAPHIC PROCESSES

Lillian M. Kellogg, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 21, 1971, Ser. No. 136,001
Int. Cl. G03c 1/28, 5/32
U.S. Cl. 96—107 19 Claims

A uniform blue light exposure of photographic silver halide grains having certain spectral sensitizing dyes adsorbed thereto, while the grains are maintained at temperatures below about —180° C., followed by warming to ambient temperatures, increases the speed and contrast of the silver halide grains during subsequent image exposure.

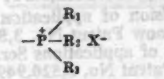
3,681,078

SELENIUM COMPOUND ANTIFOGGANT FOR SILVER HALIDE EMULSION

Robert Joseph Pollet, Vremde, and Jozef Frans Willems, Wilrijk, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed June 24, 1970, Ser. No. 49,520
Claims priority, application Great Britain, June 27, 1969, 32,640/69
Int. Cl. G03c 1/34
U.S. Cl. 96—109 14 Claims

Photographic materials are provided which comprise in a light-sensitive silver halide emulsion layer or in an adjacent water-permeable layer a selenium compound of the formula R—Se—Q wherein R stands for alkyl, aralkyl, alkaryl or aryl which may be substituted by halogen, sulpho, carboxyl or nitro or form part of a heterocyclic ring system and Q stands for halogen, cyana or



R_1, R_2 and R_3 each representing alkyl, aralkyl or aryl and X^- is an anion when R itself does not contain an anionic group. These photographic materials have decreased fogging tendency, even under conditions of high temperature and humidity, and their sensitivity is practically not lowered by the presence of these selenium compounds.

3,681,079

PHOTOSENSITIVE EMULSION COMPRISING GRAFT COPOLYMER OF AMINO ALKYL ACRYLATE

Maurice J. Fitzgerald, Canton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Jan. 22, 1971, Ser. No. 108,955
Int. Cl. G03c 1/04
U.S. Cl. 96—114 18 Claims

A photosensitive silver halide emulsion wherein the emulsion binder comprises a graft copolymer of an amine acrylate monomer on a polymer containing a plurality of hydroxyl groups.

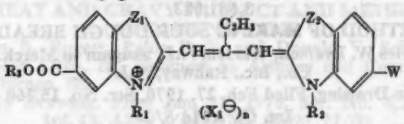
3,681,080

SILVER HALIDE PHOTOGRAPHIC EMULSION

Yoshiyuki Nakazawa, Yashuharu Nakamura, Haruo Takei, Akira Sato, and Tadashi Ikeda, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

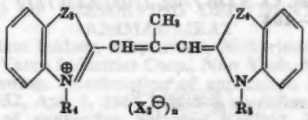
No Drawing. Filed July 23, 1970, Ser. No. 57,766
Claims priority, application Japan, July 23, 1969, 44/58,179
Int. Cl. C03c 1/08
U.S. Cl. 96—124 17 Claims

A silver halide photographic emulsion containing at least one sensitizing dye represented by the following general Formula I and at least one sensitizing dye represented by the following general Formula II:



(I)

wherein Z_1 and Z_2, which may be the same or different, are sulfur or selenium atoms; R_3 is hydrogen or alkyl having from 1 to 4 carbon atoms; W is hydrogen, halogen, an alkyl group having from 1 to 4 carbon atoms, alkoxy, hydroxyl, or aryl; R_1 and R_2, which may be the same or different, are ethyl, n-propyl, γ-sulfopropyl, γ-sulfobutyl, δ-sulfobutyl, or vinylmethyl groups with the proviso that R_1 and R_2 may not simultaneously be sulfoalkyl groups selected from the group consisting of γ-sulfopropyl, γ-sulfobutyl and δ-sulfobutyl groups, at least one of R_1 and R_2 being γ-sulfopropyl, γ-sulfobutyl or δ-sulfobutyl when R_3 is an alkyl group having from 1 to 4 carbon atoms; $X_1^\ominus$ is an anion and n is 0 or 1, n being 0 when an intramolecular salt is formed; and



(II)

wherein Z_3 and Z_4, which may be the same or different, are sulfur or selinium atoms; R_4 and R_5, which may be the same or different, are alkyl groups having from 1 to 4 carbon atoms, sulfoalkyl groups, carboxyalkyl groups or allyl groups; $X_2^\ominus$ is an anion; and n is 0 or 1, n being 0 when an intramolecular salt is formed.

3,681,081

SILVER HALIDE EMULSIONS CONTAINING MEROCYANINE AND HOLOPOLAR CYANINE DYES

Philip W. Jenkins and Leslie G. S. Brooker, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 16, 1970, Ser. No. 72,834
Int. Cl. G03c 1/10, 1/22
U.S. Cl. 96—127 11 Claims

Novel merocyanine and holopolar cyanine dyes containing a cyclopentane-1,3-dione nucleus, a 2,3,3a,4,7,7a-

hexahydro-4,7-methanoindene-1,3-dione nucleus, a 9,10, 11,12,14,15 - hexahydro-13H-9,10-endo-cyclopentanthracene-13,15-dione nucleus or a 2,3,3a,4,7,7a-hexahydro-4, 7-epoxyindene-1,3-dione, for example, attached to the polymethine chain are useful sensitizers for photographic silver halide emulsions. Depending upon their particular structure they are prepared from cyclopentane-1,3-dione or ketomethylene compounds derived from cyclopentene-1,3-dione.

3,681,082

PIGMENTATION OF EGG YOKE

Ulrich Schwieter, Reinach, Hans Thommen, Therwil, and Harald Weiser, Arlesheim, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Jan. 15, 1970, Ser. No. 3,196

Claims priority, application Switzerland, Jan. 29, 1969, 1,334/69

Int. Cl. A23k *1/16*

U.S. Cl. 99—4 **9 Claims**

Feed or drinking water compositions which provide permanent pigmentation of egg yolks and increased vitamin A sources for poultry are disclosed. The feed compositions contain citranaxanthin as well as carotenoids which impart a yellow color to the egg yolk.

3,681,083

METHOD OF MAKING SOUR DOUGH BREAD

Charles W. Everson, Warren, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Feb. 27, 1970, Ser. No. 15,260

Int. Cl. A21d *8/04*

U.S. Cl. 99—90 S **3 Claims**

Sour dough bread is produced by including in the dough ingredients the microorganism *Pediococcus cerevisiae* or *Pediococcus acidilactici* to produce lactic acid in the dough. The dough is permitted to rise for from ½ to 4 hours and then is baked.

3,681,084

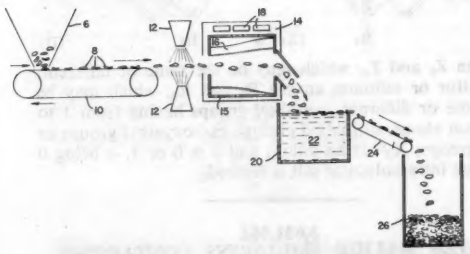
METHOD OF PRODUCING A POTATO SNACK PRODUCT

William A. Rock and Gustave J. Valleroy, Castro Valley, Calif., assignors to Cornnuts, Inc., Oakland, Calif.

Filed July 24, 1970, Ser. No. 57,951

Int. Cl. A23b *7/02, 7/03;* A23l *1/12*

U.S. Cl. 99—104 **7 Claims**



A process for preparing a potato snack product in which dehydrated potato pieces are placed in a steam atmosphere to increase their moisture content to about 13% to 14% and their temperature to about 212° F. Such pieces are then deposited in cooking oil maintained at a temperature of close to 400° F. for about 5½ seconds at which time the pieces will be cooked and following air cooling will have a moisture content of about 4%.

3,681,085

FOOD PRODUCT CONTAINING TEMPEH

Paul Gyorgy, 201 Curwen Road, Rosemont, Pa. 19010

No Drawing. Filed Apr. 27, 1970, Ser. No. 32,424

Int. Cl. A23b *1/00*

U.S. Cl. 99—107 **16 Claims**

An edible food product is prepared by forming a uniform admixture of fish pieces or fatty meat pieces and tempeh and sterilizing the resulting admixture.

3,681,086

PROCESS FOR MAKING JAMS AND JELLIES

Raymond E. Cox, Los Angeles, and Robert M. Ehrlich, Sherman Oaks, Calif., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed July 30, 1969, Ser. No. 846,290

Int. Cl. A23l *1/06*

U.S. Cl. 99—129 **3 Claims**

Preparing jams and jellies by adding an aqueous slurry of finely ground fumaric acid powder coated with mono- and di-glycerides in an aqueous medium to cooked unacidified jam and jelly ingredients.

3,681,087

CHEWING GUM COMPOSITION

Theodore R. Johnson, Jr., Weston, Mass., assignor to Meditron, Inc., Wayland, Mass.

No Drawing. Filed Apr. 15, 1970, Ser. No. 28,980

Int. Cl. A23g *3/00, 3/30*

U.S. Cl. 99—135 **8 Claims**

A chewing gum composition comprising a chewing gum base and stable miraculin in a coating and/or admixed with the base. The composition enhances and preserves the refreshing taste of the gum for long periods without the need for sugar or artificial sweeteners to improve taste.

3,681,088

NOVEL FLAVORING COMPOSITIONS UTILIZING THIAZO DERIVATIVES

Ira Katz, Elberon, and Richard A. Wilson and Christopher Giacino, Monmouth Beach, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Filed Oct. 14, 1969, Ser. No. 866,399

Int. Cl. A23l *1/26*

U.S. Cl. 99—140 R **7 Claims**

Methods and compositions for flavoring foodstuffs utilizing hydroxyalkylthiazo and acyloxyalkylthiazo derivatives.

3,681,089

WATER SOLUBLE COPOLYMERS CONTAINING AN ENTRAPPED FLAVORING AGENT

Francis E. Gould, Princeton, and Thomas H. Shepherd, Hopewell, N.J., assignors to National Patent Development Corporation, New York, N.Y.

No Drawing. Division of application Ser. No. 833,182, June 13, 1969, now Patent No. 3,576,760, and a continuation-in-part of applications Ser. No. 576,856, July 26, 1966, now Patent No. 3,520,949, Ser. No. 650,259, June 30, 1967, and Ser. No. 654,044, July 5, 1967. This application Sept. 9, 1970, Ser. No. 70,938

Int. Cl. A23l *1/26*

U.S. Cl. 99—140 R **10 Claims**

Flavoring agents, drugs, fragrances, and pesticides are entrapped in solid, hydrophilic, water soluble copolymers of a hydrophilic hydroxyalkyl acrylate or methacrylate with a water solubilizing comonomer to provide a ready source of the entrapped material on contact with water.

3,681,090

METHOD FOR MANUFACTURING PRACTICALLY STERILE, CONCENTRATED AROMAS OF SPICES, VEGETABLES AND MUSHROOMS

Heinz Huth, Holzminden, Germany, assignor to Dragoco Spezialfabrik Konz, Riech- und Aroma-Stoffe Gerberding & Co. GmbH, Holzminden, Germany

No Drawing. Filed May 26, 1970, Ser. No. 40,709
Claims priority, application Germany, May 29, 1969, P 19 27 228.7
Int. Cl. A23l *1/22*
U.S. Cl. 99—140 R 5 Claims

Method for manufacturing sterile concentrated aromas of spices, vegetables and mushrooms in the form of pastes or powders, which are soluble in water and have, in the aqueous solution, the typical taste ad smell of the cooked spices, vegetables and mushrooms. The method comprises cutting the starting materials to small pieces, mixing with water, heating from 90–150° C., cooling to below 55° C., separating the liquid from the solids, depectinizing, uperizing and finally concentrating the resulting aroma producing material.

3,681,091

METHOD OF PRESERVING FOOD MATERIALS, FOOD PRODUCT RESULTING THEREFROM, AND PRESERVATIVE COMPOSITION

Willibald F. Kohl, Nanuet, N.Y., and Rudolph H. Ellinger, Chagrin Falls, Ohio, assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 605,597 and Ser. No. 606,598, both Jan. 3, 1967. This application May 6, 1970, Ser. No. 35,270
Int. Cl. A23b *1/00, 7/00*; A23l *3/34*
U.S. Cl. 99—150 17 Claims

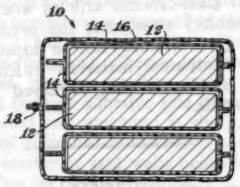
Preserving food material, especially liquids such as apple cider, against microbial spoilage for extended periods of time by incorporating 1% of a medium chain length polyphosphate, e.g., average chain length of 25, in the food material which is to be preserved.

3,681,092

FRESH MEAT PACKAGING

Oliver R. Titchenal, Berea, Ohio, Almar T. Widiger, Midland, Mich, and Robert A. Yurcisin, Seven Hills, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 25, 1968, Ser. No. 770,577
Int. Cl. B65b *25/06*
U.S. Cl. 99—174 8 Claims



A system for packaging fresh meat before the meat reaches its retail outlet or commercial user. The fresh meat is inserted in an oxygen permeable plastic film pack, which pack is then placed into a substantially oxygen impermeable outer container. Both the packs and container are vacuumized in a one-step operation, an appropriate device on the outer container permitting such simultaneous evacuation. Preferably, the outer container is then shrunk to form a tight package. The completed package is then shipped to the retail store or restaurant where the outer container is removed when the meat product is ready to be displayed or used. The oxygen permeable packs can then be post shrunk to hasten oxidation of the meat to a red bloom and to improve the appearance of the packs.

3,681,093

PROCESS FOR MAKING EDIBLE COLLAGEN CASINGS

Toshio Tsuzuki and Emanuel R. Lieberman, Somerville, N.J., assignors to Devro, Inc.

Continuation-in-part of application Ser. No. 726,940, May 6, 1968. This application June 11, 1970, Ser. No. 45,543
Int. Cl. D09f *9/04*
U.S. Cl. 99—175 12 Claims

Fluid aqueous dispersions of fresh hide collagen for extrusion into casings such as for pork sausages and wieners are treated under acid conditions with an enzyme produced from the genus Aspergillus and then incubated prior to extrusion. After extrusion, the enzyme in the casing is inactivated by treating the casing with an alkaline solution.

3,681,094

MEAT AND GRAVY PRODUCT AND METHOD OF MAKING SAME

Alan B. Rogers, Palos Park, and Donald V. Schwall, Glen Ellyn, Ill., assignors to Armour and Company, Chicago, Ill.

No Drawing. Filed Jan. 21, 1970, Ser. No. 4,763
Int. Cl. A23b *1/00*; A22c *18/00, 21/00*
U.S. Cl. 99—187 10 Claims

A meat product, such as a meat roast or loaf, is packaged with a gravy mixture. Gelatin is incorporated within the gravy mixture, and the gravy mixture is placed in the bottom of a container. The gravy containing gelatin is allowed to set, and thereafter the meat product is placed on top of the gelled gravy without substantial commingling of the meat and gravy ingredients. Upon cooking the meat product, the cook-out juices exuded therefrom mix with the gravy mixture.

3,681,095

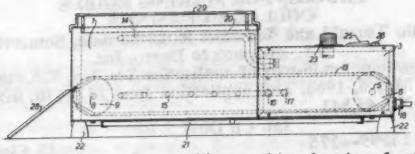
METHOD OF PRESERVING DEHYDRATED RAW ANIMAL MEAT

Petrus Adam Inklaar, Diepenveen, Netherlands, assignor to Vasco Industries Corp., New York, N.Y.

No Drawing. Continuation of application Ser. No. 628,552, Apr. 5, 1967, which is a continuation-in-part of application Ser. No. 527,063, Feb. 17, 1966, now Patent No. 3.552,978. This application June 4, 1970, Ser. No. 41,769
Claims priority, application Netherlands, Apr. 12, 1966, 6604815
The portion of the term of the patent subsequent to Jan. 5, 1988, has been disclaimed
Int. Cl. A23b *1/04*
U.S. Cl. 99—208 9 Claims

Raw animal meat preserved by dehydration, such as by freeze-drying, is enhanced in the retention of its original structure and in juice retentivity when reconstituted for consumption, by incorporating into the meat before the dehydration from 0.1 to 1% by weight of non-toxic monocarboxylic alpha amino acid that has, either of itself or by being mixed with a pH control substance, a pH between 6 and 10 when in 1% solution in water. The amino acid is incorporated into the meat by contact, such as by rubbing it on moist surfaces of the meat or immersing the meat in an aqueous solution of the amino acid or injecting such a solution into the meat.

3,681,096
APPLIANCES FOR COOKING AND/OR HEATING FOODSTUFFS
Oscar Philipe, London, England, assignor to Anglo Swiss (Equipment Production) Limited, London, England
Filed Nov. 4, 1970, Ser. No. 86,756
Claims priority, application Great Britain, May 11, 1970, 22,557/70
Int. Cl. A47j *37/04*
U.S. Cl. 99—339 9 Claims



An appliance for cooking and/or heating foodstuffs, comprising a heating chamber, an endless conveyor belt or chain running over pulleys or sprockets and having at least a portion of at least one run passing through the heating chamber and heating elements in the heating chamber located above and below the one run of the chain.

3,681,097
LOW EXPANSION ZINC PETALITE-BETA QUARTZ GLASS-CERAMIC ARTICLES
George H. Beall, Corning, and Francis W. Martin, Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.
No Drawing. Filed Aug. 19, 1970, Ser. No. 65,264
Int. Cl. C04b *33/00*
U.S. Cl. 106—39 DV 5 Claims

This invention relates to the manufacture of glass-ceramic articles exhibiting very low coefficients of thermal expansion which have compositions in the ZnO-Al_2O_3-SiO_2 field. The essential absence of alkali metal in the compositions endows the products of this invention with high electrical resistivity.

3,681,098
OPAL GLASS COMPOSITIONS COMPRISING CALCIUM FLUORIDE
William H. Dumbaugh, Jr., Painted Post, and James E. Flannery and George B. Hares, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Jan. 14, 1970, Ser. No. 2,769
Int. Cl. C03c *3/04*
U.S. Cl. 106—52 2 Claims

This invention relates to the manufacture of spontaneous opal glasses wherein the opacity therein is the result of amorphous droplets and calcium fluoride (CaF_2) crystals. More specifically, this invention relates to spontaneous opal glasses consisting essentially, by weight on the oxide basis, of about 50–75% SiO_2, 3–14% Al_2O_3, 10–20% CaO, 3–10% R_2O, wherein R_2O consists of 0–7% Na_2O and 0–7% K_2O, 0.25–5% MoO_3 and/or WO_3 and/or As_2O_3 and 2–5% F.

3,681,099
GLOSSY FINISH LINSEED WATER EMULSION PAINTS AND NONAGGLOMERATED PIGMENT COMPOSITION FOR SAID PAINTS
Lambertus H. Princen, Peoria, Ill., assignor to the United States of America as represented by the Secretary of Agriculture
Continuation-in-part of application Ser. No. 705,316, Feb. 14, 1968. This application Aug. 4, 1970, Ser. No. 61,252
Int. Cl. C09c *1/04, 1/36;* C09d *3/30*
U.S. Cl. 106—254 4 Claims

Stable aqueous emulsion linseed oil housepaints having a PVC of 28 percent and that dry to nonflat, i.e., semi-gloss or highly glossy finishes are produced by first dispersing the metallic oxide pigment(s) in hexane, benzene, chloroform or similar low boiling solvent containing emulsifiers and sufficient linseed oil to fully coat the unaggregated 0.25μ pigment particles, and the resulting dispersion or suspension is then gently emulsified in water. Evaporation of the low boiling solvent followed by the incorporation of additional oil provides the improved aqueous linseed emulsion paint of the invention.

3,681,100
LIGHT STABLE ORANGE PIGMENT BASED ON QUINACRIDONE SOLID SOLUTION
Edward E. Jaffe, Union, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Oct. 8, 1970, Ser. No. 79,306
Int. Cl. C08h *17/14*
U.S. Cl. 106—288 Q 2 Claims

Solid solutions are produced consisting essentially of linear quinacridone (QA), 4,11-dichloroquinacridone (4,11-dichloro-QA), quinacridonequinone (QAQ), and dihydroquinacridone (DQA).

3,681,101
METHOD OF PREPARING PIGMENT COMPOSITION
Thomas S. Griffin, Webster Groves, Warren Rodgers, St. Louis, and Charles R. Trampier, Jr., Webster Groves, Mo., assignors to N. L. Industries, Inc., New York, N.Y.
No Drawing. Filed Oct. 9, 1970, Ser. No. 79,708
Int. Cl. C09c *1/00, 1/02, 1/36*
U.S. Cl. 106—299 2 Claims

This invention relates to a new composition of matter which is useful as a pigment composition for the paper industry. The composition comprises an intimate mixture of TiO_2, $Al_2O_3 \cdot SiO_2 \cdot H_2O$ and $CaSO_4$.

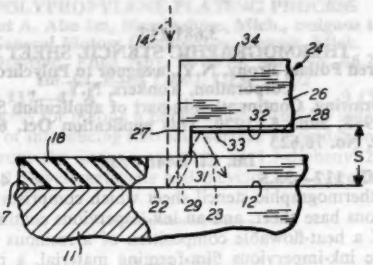
3,681,102
TRANSPARENT GLASS-CERAMIC ARTICLES COMPRISING ZINC SPINEL
George H. Beall, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 648,944, June 26, 1967. This application Mar. 27, 1970, Ser. No. 23,478
Int. Cl. C04b *33/00*
U.S. Cl. 106—39 DV 2 Claims

This invention relates to the production of transparent glass-ceramic articles through the controlled heat treatment of glasses in the ZnO-Al_2O_3-SiO_2 composition field. More particularly, this invention relates to the production of transparent glass-ceramic articles wherein zinc spinel, $ZnAl_2O_4$, (gahnite) constitutes the predominant crystal phase. These glass-ceramics can be doped with Cr_2O_3 to produce red transparent materials which exhibit photoluminescence similar to that displayed in Cr_2O_3-doped corundum crystals.

3,681,103
METHOD OF DELINEATING A SELECTED REGION ON A SURFACE
Martin J. Brown, Lambertville, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.
Original application Mar. 1, 1968, Ser. No. 709,672, now Patent No. 3,544,790. Divided and this application Oct. 16, 1970, Ser. No. 81,583
Int. Cl. B44d *1/02, 1/50;* C23b *7/00*
U.S. Cl. 117—8.5 3 Claims

An improved mask provides increased resolution of a substrate pattern delineated by electron beam radiation-induced polymerization over selected portions of a coating on the substrate. A peripheral lip extending from the bottom of the mask penetrates the coating and contacts

the substrate to prevent electrons scattered from the substrate portions adjacent the mask from penetrating and curing the coating portion below the mask. The remainder



of the scattered energy is dissipated in an internal cavity defined by the inner surface of the lip and the bottom of the mask.

3,681,104

MANUFACTURE OF A FLOOR COVERING WITH A PILE

Joachim Schabel, Bremen, and Hans-Peter Liebegott, Achim, Bezirk, Bremen, Germany, assignors to DS-Chemie GmbH & Co. KG., Bremen, Germany

No Drawing. Filed June 2, 1970, Ser. No. 42,862
Int. Cl. D06m *17/00*
U.S. Cl. 117—76 T 4 Claims

A method of manufacturing a floor covering which includes a pile, a pile support material and a foamed thermoplastic backing is characterised in that an anti-foaming agent is applied to the back of the pile support material before a thermoplastic paste is applied thereto.

3,681,105

PRESSURE-SENSITIVE ADHESIVE WEB PRINTED ON BACK WITH TRANSFER-PROOF INK

Ivan Cutakovic Milutin, Burscheid, Germany, and Charles Bartell, Highland Park, and Alfred Blum, Skokie, Ill., assignors to Borden Inc., New York, N.Y.

No Drawing. Filed Apr. 22, 1970, Ser. No. 30,961
Int. Cl. B41n *1/24;* B44c *1/08;* B44d *1/32*
U.S. Cl. 117—15 7 Claims

A transfer-proof ink particularly suitable for printing on the backing of pressure-sensitive adhesive webs such as tapes, said ink containing a compatible transfer-proofing agent soluble in the ink solvent but substantially insoluble in both backing and adhesive layers of web. The invention includes pressure-sensitive webs which have printed matter on the non-adhesive side of said webs and which can be wound and unwound in the usual manner without transfer of either ink or adhesive to the adjacent side, the printed matter of said webs being formed from the transfer-proofing ink of this invention.

3,681,106

ELECTROSTATIC DEVELOPER CONTAINING POLYESTER RESIN AND A PROCESS OF USING SAME

Joseph P. Burns and Joseph Feltzin, Wilmington, Del., assignors to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Filed Dec. 11, 1970, Ser. No. 97,311
Int. Cl. G03g *9/02*
U.S. Cl. 117—17.5 20 Claims

Electrostatic compositions are disclosed which comprise a toner containing a coloring agent and a polyester resin, and can include carrier particles. The polyester resin is prepared from a dicarboxylic acid and a polyhydroxy composition which contains an alkylene oxide derivative of a bisphenol and an alkylene oxide derivative of a second polyhydroxy compound.

3,681,107

DEVELOPMENT OF ELECTROSTATOGRAPHIC IMAGES

Joseph H. Moriconi, Rochester, Frank M. Palermiti, Pittsford, and Burton B. Jacknow, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

No Drawing. Original application June 5, 1967, Ser. No. 643,396, now Patent No. 3,609,082, dated Sept. 28, 1971. Divided and this application Sept. 22, 1970, Ser. No. 74,497
Int. Cl. G03g *13/08*
U.S. Cl. 117—17.5 5 Claims

Development of electrostatographic images with a finely divided toner, said toner having a blocking temperature of at least about 110° F., and a melt viscosity less than about 2.5×10^{-4} poise at temperatures up to about 450° F., comprising a colorant, a thermoplastic resin comprising a vinyl resin having a melting point at least about 110° F., a solid ester of o-phthalic or m-phthalic acid, and a solid metal salt of a fatty acid.

3,681,108

METHOD OF COATING A FABRIC OR TEXTILE WITH COPOLYMERS OF MONOUNSATURATED OR DIUNSATURATED POLYESTERS WITH VINYL MONOMERS

Sheldon N. Lewis, Willow Grove, and John J. Miller, Warminster, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Mar. 10, 1970, Ser. No. 18,290
Int. Cl. B44c *1/08;* B44d *1/09*
U.S. Cl. 117—33 8 Claims

The invention provides new copolymers of (I) monounsaturated or diunsaturated addition polymerizable polyester monomers and (II) vinyl monomers. The resulting copolymer is considered to be a vinyl polymer (e.g., an acrylic polymer) containing a pendant polyester plasticizer as an integral part of the polymer. It is not essential that the copolymer be crosslinked or thermoset, and yet the plasticizer is a permanent part of the polymer—not subject to being leached out of the polymer, as is the case with an external plasticizer. While thermosetting or crosslinked compositions are known which bind external plasticizers to the substrate, the very object of attaining flexibility is to a large extent defeated by the binding agent itself when present in large amounts. Also provided are new monomers in the form of unsaturated polyesters having one or two double bonds per molecule. Textile articles characterized by improved water-resistance, wet abrasion or crock resistance, softness of hand, wet and dry peel strengths, washfastness, drycleanability and higher flock density are obtained by following the invention. One of the important advantageous properties of the polymer of the invention is the cold flexing strength of products such as flocked fabrics made therewith.

3,681,109

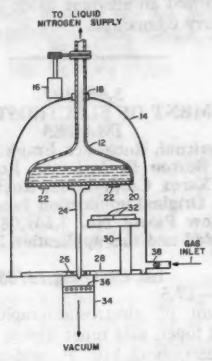
AMORPHOUS BISMUTH OXIDE CONTAINING COATINGS

Morton L. Lieberman, Albuquerque, N. Mex., assignor to Corning Glass Works, Corning, N.Y.

Filed May 6, 1970, Ser. No. 35,105
Int. Cl. B29d *11/00;* C03c *17/22*
U.S. Cl. 117—33.3 6 Claims

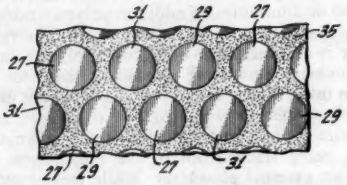
A method of depressing the extinction coefficient of bismuth oxide containing films comprising combining with

the bismuth oxide at least one non-absorbing metal oxide. In films wherein the atomic ratio of bismuth to the other



metal is between 0.5 and 2.0, the refractive index is greater than 2.0 and the extinction coefficient is less than 0.005.

3,681,110
METHOD OF PRODUCING A LUMINESCENT-SCREEN STRUCTURE INCLUDING LIGHT-EMITTING AND LIGHT-ABSORBING AREAS
Nathan Feldstein, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.
Filed May 5, 1970, Ser. No. 34,698
Int. Cl. B44d *1/092, 1/10, 1/18*
U.S. Cl. 117—33.5 CM **6 Claims**



A method including coating on a support surface a pattern of deposits comprised of film-forming binder material containing phosphor particles; electrolessly plating only the uncoated surface areas between the deposits with at least one metal of the group: nickel, cobalt, and copper; and then chemically converting the plated metal to a dark-colored compound material.

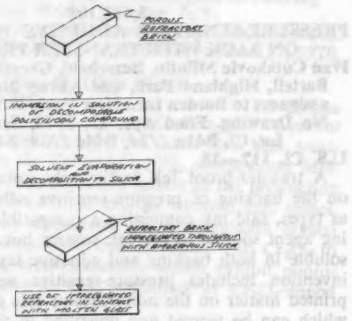
3,681,111
MANUFACTURE OF A COLOR PICTURE TUBE
Sam H. Kaplan, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Aug. 24, 1970, Ser. No. 66,456
Int. Cl. H01j *31/20*
U.S. Cl. 117—33.5 CM **4 Claims**

The mosaic image screen of a shadow mask color tube has a plurality of interlaced sets of elemental screen areas, each of which areas includes a phosphor of a particular color and a filter which is transmissive of that color but, otherwise, is essentially a visible light attenuator. The filters of at least one of these interlaced sets of elemental screen areas are formed of discrete spheres of a glass that preferably has a low index of reflection and a fusion or softening temperature so high in relation to the processing temperatures of the tube that the spheres do not become fused to the faceplate of the tube.

3,681,112
THERMOGRAPHIC STENCIL SHEET
Fred Pollak, Bronx, N.Y., assignor to Polychrome Corporation, Yonkers, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 43,950, June 5, 1970. This application Oct. 6, 1970, Ser. No. 78,623
Int. Cl. B44d *3/30*
U.S. Cl. 117—35.5 **4 Claims**

A thermographic stencil sheet which comprises an ink-pervious base sheet, and an ink-impervious coating thereon of a heat-flowable composition of a resinous thermoplastic ink-impervious film-forming material, a plasticizing material partially but incompletely compatible with said film-forming material, and a small amount of a polyethylene glycol having a molecular weight of about 3000 to about 5000, said composition being soluble in a volatile solvent and forming a substantially clear homogeneous continuous imperforate coating when deposited from a solution thereon, and said coating being provided on said base sheet by deposition of said composition on the base sheet from a solvent solution thereof.

3,681,113
REFRACTORY ARTICLE AND METHOD FOR PRODUCING SAME
Bulent E. Yoldas, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Nov. 19, 1969, Ser. No. 878,106
Int. Cl. C03c *25/00*
U.S. Cl. 117—46 FA **13 Claims**


POROUS REFRACTORY BRICK
IMPREGNATION IN SOLUTION OF DECOMPOSABLE POLYSILICON COMPOUND
SOLVENT EVAPORATION AND DECOMPOSITION TO SILICA
REFRACTORY BRICK IMPREGNATED THROUGHOUT WITH AMORPHOUS SILICA
USE OF IMPREGNATED REFRACTORY IN CONTACT WITH MOLTEN GLASS

Impregnated refractory structures, such as, for example, bricks which have increased resistance to the destructive action of molten glass are disclosed. The structures are produced by an impregnation and densification process in which conventional, prefabricated, solid, porous, refractory structures are first treated with a solution of a polysilicon compound which is thermally decomposable to silica, and the solution-treated structure is then heat treated, to cause a deposition of amorphous silica in the brick pores. Because of the silica deposition and pore impregnation, a densification and decrease in porosity is effected which greatly decreased molten glass penetration and internal destruction of the silica impreg-

nated refractory structure. The use of these impregnated structures also produce a glass with substantially fewer seeds. A particularly suitable polysilicon compound which may be employed is a hydrolyzed and condensed ethyl silicate.

3,681,114
POLYPROPYLENE PLATING PROCESS
Ismat A. Abu-Isa, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
No Drawing. Filed Nov. 2, 1970, Ser. No. 86,291
Int. Cl. B44d *1/092*; C23c *17/02*
U.S. Cl. 117—47 A **3 Claims**

A process for plating a polypropylene surface including the step of introducing into said surface an oxidation promoter from the group consisting of 1,3-diphenyl-2-propanone, 1,5-cyclooctadiene and bicyclo(2,2,1)-heptane-2-5 diene.

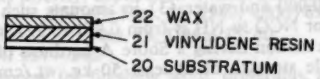
3,681,115
HOT PRESSING PROCESS
Stephen L. Maher, Grand Rapids, Mich., assignor to Packaging Corporation of America, Evanston, Ill.
No Drawing. Filed Nov. 9, 1970, Ser. No. 88,133
Int. Cl. B44d *1/44*; C10m *3/44*
U.S. Cl. 117—64 R **3 Claims**

An improved process for hot pressing molded pulp items which comprises applying an aqueous emulsion of silicone oil to moisten a portion of the surface of a pulp molded item which is subsequently hot pressed. The concentration of silicone in the emulsion is at least about 0.0025% by weight. The process reduces the amount of foreign deposit build-up on the press molds normally associated with hot pressing operations.

3,681,116
FLEXIBLE CAST-COATED PAPER
Eugene H. Reich, Kenhorst, and Frank J. Zasztowt, Reading, Pa., assignors to Wyomissing Corporation
No Drawing. Filed Apr. 29, 1970, Ser. No. 33,092
Int. Cl. B44d *1/44*
U.S. Cl. 117—64 C **2 Claims**

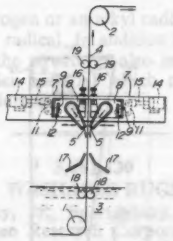
A cast-coated paper is disclosed in which the coated paper has improved properties of flex, ply, stretch, and a more natural limp, rag-like feel. The improved properties are attained by selecting for the substrate certain saturated papers having porosities lying in a defined narrow range.

3,681,117
VINYLIDENE RESIN/COATED SUBSTRATUM HAVING A UNIFORM OUTER WAX COATING
Samuel E. Jolly, Ridley Park, Edward M. Kohn, Philadelphia, and John D. Tench, Springfield, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.
Filed Oct. 21, 1970, Ser. No. 82,792
Int. Cl. B32b *27/30*; B44d *1/16*
U.S. Cl. 117—75 **7 Claims**



A petroleum wax coating, which covers the entire area of a vinylidene resin coated substratum as an outer layer of uniform thickness, is obtained by the addition of a small amount of an ester or mixture of esters of a fatty acid and a polyhydric alcohol to the wax before application.

3,681,118
METHOD OF REMOVING EXCESS MOLTEN METAL COATINGS BY EMPLOYING LOW PRESSURE GAS STREAMS
Tsuyoshi Ohama, Ichikawa-shi, and Tetsuji Iwasaki, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, and Nisshin Steel Co., Ltd., Tokyo, Japan
Continuation-in-part of application Ser. No. 696,907, Jan. 10, 1968, which is a continuation-in-part of application Ser. No. 518,154, Jan. 3, 1966. This application Feb. 26, 1970, Ser. No. 14,491
Claims priority, application Japan, June 8, 1965, 40/34,244; June 9, 1965, 40/34,555
Int. Cl. B05c *11/06*; C23c *1/00*
U.S. Cl. 117—102 M **12 Claims**



A method and apparatus for continuous hot dip metal coating of a metal strip without using coating rolls, wherein gas under pressure is directed onto opposite faces of the metal strip during its continuous upward movement out of a molten coating metal bath. The pressurized gas blows away any excess coated metal while the coating is still in its non-solidified state.

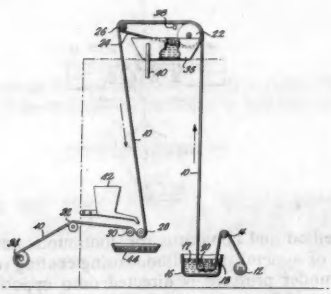
3,681,119
STRIPPING EXCESS COATING LIQUID FROM MOVING STRIP MATERIALS
Paul Reid and Brian James, New Lambton, New South Wales, Australia, assignors to John Lysaght (Australia) Limited, Sydney, New South Wales, Australia
Filed May 26, 1970, Ser. No. 40,509
Int. Cl. B05c *11/06*
U.S. Cl. 117—102 L **5 Claims**

Method and apparatus for stripping excess coating liquid from an upwardly moving strip with gas streams, and reducing the ripple developing effect of the upward component of gas streams impinging on the coated strip by dispersing or suppressing part of the upward component which formerly remained adjacent the surface of the strip by placing a stream-flow modifying element in the path of the upward component.

3,681,120
COATING GLASS FILAMENTS
Malcolm D. Wilding, Rugby, England, assignor to Courtaulds Limited, London, England
No Drawing. Filed June 19, 1970, Ser. No. 47,863
Claims priority, application Great Britain, July 21, 1969, 36,543/69
Int. Cl. C03c 25/02
U.S. Cl. 117—119.2 1 Claim

Glass filaments are coated with an aqueous solution or emulsion of a phenolic-formaldehyde reaction product and a rubber latex having a temperature below 12° C.

3,681,121
COATING PROCESS
Anthony R. Rizzo, Lynn, Mass., assignor to AFCO Products, Inc., Somerville, Mass.
Continuation of application Ser. No. 580,656, Sept. 20, 1966. This application Aug. 21, 1970, Ser. No. 66,104
Int. Cl. B44d 1/44
U.S. Cl. 117—119.4 8 Claims



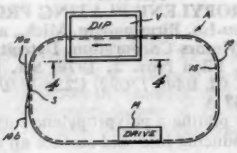
A method of coating a sheet of material with a tacky substance involving causing the coated sheet of material to pass over an absorbent surface which has absorbed fluid and which changes the direction of travel of said material and applying the fluid to the absorbent surface during the coating process to prevent sticking of the coated material to the coating machinery. Apparatus for carrying out said method.

3,681,122
SURFACE CONDITIONER FOR GLASS-CERAMICS
Joseph J. Domicone, Horseheads, and Garo M. Ziver, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 671,136, Sept. 27, 1967. This application Mar. 15, 1971, Ser. No. 124,498
Int. Cl. C03c 17/30, 17/28
U.S. Cl. 117—124 F 4 Claims

A composition for conditioning the surface of glass-ceramic articles subjected to elevated temperatures and a method of treating such articles by applying to the surface a composition containing a dimethyl silicone fluid whereby a heat resistant protective coating is formed thereon.

3,681,123
METHOD AND APPARATUS FOR MANUFACTURING CANDLES
Joseph F. Reilly, Jr., Joseph D. Daigle, and Daniel W. Hubenak, Jr., Harris County, Tex., assignors to Faroy, Inc.
Filed Aug. 10, 1970, Ser. No. 62,341
Int. Cl. B44d 1/06; C11c 5/02
U.S. Cl. 117—121.2 19 Claims

A machine and method for automatically making candles wherein a plurality of racks each containing the wicks of the candles to be formed are mounted on a circulating overhead conveyor system which cyclically and sequentially dips the racks into a vat of molten wax and then transports the racks along the conveyor system, allowing the applied molten wax to cool and solidify before the next dip cycle. The machine contains apparatus to



automatically perform the dip cycle, including means to insure that the racks of wicks are properly positioned for the dip cycle, means for adjusting the depth of immersion of the wick racks into the molten wax, and means for insuring that the wick racks are inserted the proper depth into the molten wax.

3,681,124
PROCESS FOR PREPARING DURABLE FLAME-RETARDANT SYNTHETIC-CELLULOSIC FABRIC BLENDS
Stephen B. Sello, Cedar Grove, N.J., and Paul H. Egrie, New York, N.Y., assignors to J. P. Stevens & Co., Inc., New York, N.Y.
No Drawing. Filed Feb. 2, 1970, Ser. No. 8,031
Int. Cl. C09k 3/28; C09d 5/18
U.S. Cl. 117—136 11 Claims

Fabric blends of cellulosic and polyester fibers are rendered durably flame-retardant by impregnating with

(A) tetrakis(hydroxymethyl)phosphonium chloride and urea (or a precondensate of these reactants),
(B) a reaction product of melamine with either formaldehyde or formaldehyde and methanol, and
(C) a fatty acid ester of polyethylene glycol,

and forming insoluble reaction products on said fabric. The fatty acid ester of polyethylene glycol serves both to soften the fabric and to carry fireproofing reaction products onto the polyester component.

3,681,125
PROCESS FOR THE PRODUCTION OF MICROPOROUS SHEET STRUCTURES
Harro Träubel, Leverkusen-Kueppersteg, and Klaus König, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Nov. 29, 1968, Ser. No. 780,264
Claims priority, application Germany, Dec. 7, 1967, F 54,242
Int. Cl. B32b 3/00; C08j 1/14
U.S. Cl. 117—135.5 5 Claims

Microporous sheet structures are prepared by reacting a compound having a molecular weight of from about 500 to about 10,000 and at least two terminal OH groups (1), an organic polyisocyanate (2) having at least two NCO groups and a molecular weight of from about 100 to about 10,000 and water (3) in amounts such that the NCO:OH or NCO to NH is from 0.8/1 to 2/1, the product of the reaction having a Shore A hardness of at least 50, a tensile strength of at least 50 kg. wt./cm.² and a softening point above 100° C. the reaction occurring in a solvent thus dissolves the compounds (1) and (2) and dissolves the polyurethane urea formed with increasing difficulty as polyaddition increases and causes gelling after 20 minutes at the most, does not cause substantial swell-

ing of the completely reacted polymer and is substantially removed after solidification and pouring the reaction mixture into a support.

3,681,126

FLAME RETARDANT ARTICLE CONTAINING TRIS-(3 - HALO - 2-HYDROXYPROPYL)-HYDROXYMETHYLPHOSPHONIUM CHLORIDE

Ludwig Maier, Zurich, Switzerland, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,808

Claims priority, application Switzerland, Nov. 25, 1969, 17,836/69

Int. Cl. C09d *5/18;* C09k *3/28*

U.S. Cl. 117—136 2 Claims

Tris - (3-halo - 2 - hydroxypropyl) - hydroxymethylphosphonium chloride compounds of the structure

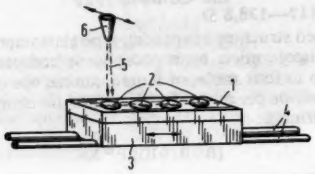
$$[(XCH_2CHCH_2)_3PCH_2OH]^+Cl^-$$
$$\quad\quad\quad

3,681,132

METHOD OF PRODUCING A PROTECTIVE LAYER OF SiO_2 ON THE SURFACE OF A SEMICONDUCTOR WAFER

Erich Pammer and Peter Heidegger, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed June 25, 1970, Ser. No. 49,618
Claims priority, application Germany, July 2, 1969, P 19 33 664.2
Int. Cl. C23c *13/02*; C23f *7/02*; H01b *1/08*
U.S. Cl. 117—201 4 Claims



A gas jet of SiH_4 and inert gas is passed over heated semiconductor wafers on a substrate and thickly coats the substrate in the area of the wafers, simultaneously causing oxygen to act on the wafers to provide a homogeneous layer of SiO_2 on the wafers.

3,681,133

PHOTOCONDUCTIVE TITANIUM DIOXIDE COMPOSITION

Horace F. Dantro, Toms River, N.J., assignor to N L Industries, Inc.

No Drawing. Filed Dec. 7, 1970, Ser. No. 95,891
Int. Cl. H01c *7/08*; H01b *1/08*
U.S. Cl. 117—201 2 Claims

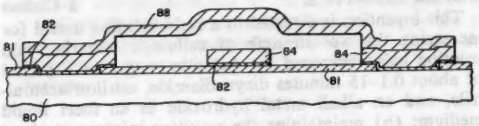
A new type of photoconductive anatase titanium dioxide composition has been produced which comprises euhedral shaped titanium dioxide particles having an average individual crystal size from 0.2 to 5.0 microns, the surface of said crystals containing a dense coating of lead oxide in amount from 0.2% to 4%, the percentages calculated as PbO and based on the weight of the titanium dioxide.

3,681,134

MICROELECTRONIC CONDUCTOR CONFIGURATIONS AND METHODS OF MAKING THE SAME

Harvey C. Nathanson, Pittsburgh, and John R. Davis, Jr., Export, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application May 31, 1968, Ser. No. 733,582, now Patent No. 3,539,705, dated Nov. 10, 1970. Divided and this application May 26, 1970, Ser. No. 40,627
Int. Cl. B44d *1/18*; H01l *7/00*; H05k *3/30*
U.S. Cl. 117—212 6 Claims



Small metal-air gap metal structures are provided that can be batch fabricated as part of a microelectronic component such as an integrated circuit. Spaced metal elements of such structures can be optionally closed by compression bonding. They may also be used as crossovers in a multilayer conductive interconnection scheme, used to provide a variety of microwave functions and generally improve the flexibility and diversity available in microelectronic components.

3,681,135

PRINTED CIRCUITS AND METHOD OF MAKING SAME

Walter Graham Cheary, Hall Green, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

No Drawing. Continuation-in-part of application Ser. No. 682,608, Nov. 13, 1967. This application June 24, 1970, Ser. No. 49,532
Int. Cl. H05k *1/00*
U.S. Cl. 117—212 9 Claims

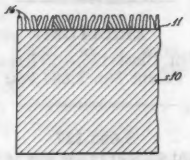
Electrical printed circuits formed by applying to an alumina substrate a conductive ink comprising a mixture of approximately 5% by weight of titanium hydride, 10% by weight of lead, with the remainder being a mixture of copper and gold, the copper ranging between 50% and 80% by weight of the whole ink mix and the gold ranging between 5% and 20% by weight of the whole ink mix, and an organic binder, and firing said conductive ink onto said substrate.

3,681,136

METAL-METAL SALT ELECTRODES AND PROCESS

John E. Leonard and Hideo Watanabe, Fullerton, Calif., assignors to International Biophysics Corporation, Irvine, Calif.

Filed Mar. 2, 1970, Ser. No. 15,516
Int. Cl. B44d *1/44*
U.S. Cl. 117—230 17 Claims



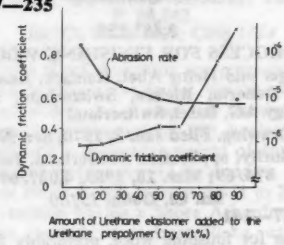
A process for fabricating metal-metal salt electrodes comprising forming a coating of a binary metal salt composition on a metal substrate and leaching a soluble component from the composition. A porous metal salt coating is thereby formed on the metal substrate. Preferably the binary salt composition is a eutectic composition which has a low melting point and provides a porous structure after leaching.

3,681,137

MAGNETIC RECORDING MEDIA

Yasuro Nagazono and Terufumi Kamijo, Tokyo, Japan, assignors to TDK Electronics Company Ltd., Tokyo, Japan

Filed Mar. 26, 1971, Ser. No. 128,410
Claims priority, application Japan, Apr. 7, 1970, 45/29,207
Int. Cl. H01f *10/02*
U.S. Cl. 117—235 3 Claims



Magnetic recording media may be prepared by mixing a magnetic powder with a binder which is obtained by adding 10–50% by weight of butyl cellulose acetate resin

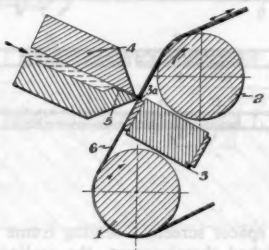
to a mixture of 40–80% by weight of urethane prepolymer and 20–60% by weight of urethane elastomer and by adding further, as a hardener, an aromatic polyamine in a stoichiometric amount with respect to the —NCO groups in the urethane prepolymer.

3,681,138

PROCESS FOR PREPARING MAGNETIC TAPES

Fritz Ankenbrand, Neuried, Kurt Herrmann, Pullach, and Werner G. Wilke, Starnberg, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 3, 1970, Ser. No. 8,238
Claims priority, application Germany, Feb. 13, 1969, P 19 07 212.9
Int. Cl. H01f *10/00*
U.S. Cl. 117—238 **5 Claims**



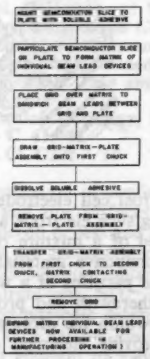
Magnetic tapes are prepared wherein magnetizable, binding-agent-containing coatings are applied upon a supporting film with an extrusion molding of non-ferromagnetic material. The extrusion orifice is disposed opposite a magnetized edge over which the film glides and runs off in the field direction at a field intensity of 100 to 500 oe., with the field intensity at the edge being above 700 oe. and having a gradient of more than 500 oe./cm.

3,681,139

METHOD FOR HANDLING AND MAINTAINING THE ORIENTATION OF A MATRIX OF MINIATURE ELECTRICAL DEVICES

Frederick Joseph Jannett, West Millington, and Jaroslav Mracek, Lawrence Township, Mercer County, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 16, 1969, Ser. No. 866,981
Int. Cl. B32b *35/00*; B25b *11/00*
U.S. Cl. 156—344 **2 Claims**


MOUNT SEMICONDUCTOR SLICE TO PLATE WITH SOLUBLE ADHESIVE
PARTICULATE SEMICONDUCTOR SLICE OR PLATE TO FORM MATRIX OF INDIVIDUAL BEAM LEAD DEVICES
PLACE GRID OVER MATRIX TO SANDWICH BEAM LEADS BETWEEN GRID AND PLATE
DRAW GRID-MATRIX-PLATE ASSEMBLY ONTO FIRST CHUCK
DISSOLVE SOLUBLE ADHESIVE
REMOVE PLATE FROM GRID-MATRIX-PLATE ASSEMBLY
TRANSFER GRID-MATRIX ASSEMBLY FROM FIRST CHUCK TO SECOND CHUCK, MATRIX CONTACTING SECOND CHUCK
REMOVE GRID
EXPAND MATRIX (INDIVIDUAL BEAM LEAD DEVICES NOW AVAILABLE FOR FURTHER PROCESSING OR MANUFACTURING OPERATION)

Grid is placed in channels of matrix of beam lead devices cemented with soluble adhesive to plate. Grid-matrix-plate assembly is drawn by vacuum onto first chuck with pattern of apertures at one end. Solvent is forced through first chuck and apertures to dissolve adhesive. Plate is removed and grid-matrix assembly transferred to second chuck which may be porous block operable with vacuum, magnetic block cooperating with magnetic grid, or a combination thereof. Second chuck may also be magnetic block having mesas and cooperating with magnetic grid, nonmagnetic block having apertures through mesas operable with vacuum, or combination thereof. After transfer to second chuck, grid is removed and matrix expanded.

3,681,140

METHOD FOR CLEANING ALUMINUM EMPLOYING PHOSPHINE OXIDES

Ronald H. Carlson, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Mar. 30, 1970, Ser. No. 23,966
Int. Cl. C23g *1/18, 1/22*; C23f *3/02*
U.S. Cl. 134—2 **11 Claims**

A method for cleaning aluminum by contacting said metal with an aqueous solution of a phosphine oxide.

3,681,141

PROCESS FOR CLEANING HARD SURFACES

Erland L. Muolo, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

No Drawing. Continuation of abandoned application Ser. No. 687,440, Dec. 4, 1967. This application Dec. 17, 1970, Ser. No. 99,320
Int. Cl. C23g *1/02*
U.S. Cl. 134—41 **6 Claims**

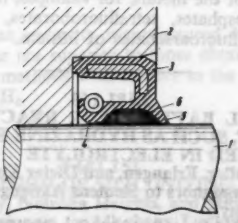
The disclosure relates to a process for cleaning hard surfaces such as the porcelain and enamel surfaces of sanitary ware which are in contact with water. Cleaning is effected by applying to such surfaces a viscous, fluid composition consisting essentially of water, a mineral acid and a water-soluble synthetic organic polymer. Optional additional ingredients may also be present. The cleaning compositions readily wet the surface to be cleaned and form a uniform, continuous sheet of active material below the water line.

3,681,142

RADIAL SEALING RINGS AND METHOD OF IMPROVING THEIR SEALING ACTION

Wilhelm Schmitt, Erbach, near Heppenheim, Germany, assignor to Carl Freudenberg, Weinheim an der Bergstrasse, Germany

Filed Apr. 10, 1969, Ser. No. 815,532
Claims priority, application Germany, Apr. 10, 1968, P 17 50 230.6
Int. Cl. B08b *3/08, 17/00*
U.S. Cl. 134—42 **10 Claims**



A radial sealing ring which surrounds a rotary shaft is placed between a supply of hypoid oil or another lubricant which contains additives tending to form deposits on the sealing lip or lips of the sealing ring and/or on the shaft, and a mixture which is effective to either prevent the formation of or to dissolve the deposits on the sealing

lips or edges of the sealing ring and/or on the rotating part which is engaged by the sealing ring. The mixture contains 43 percent by weight of hydrocarbons, 35 percent by weight of barium metal soap, 13.5 percent by weight of a zinc-containing compound of thiophosphoric acid, 8 percent by weight montmorillonite and 0.5 percent by weight of acetone.

3,681,143
LITHIUM-METAL VANADATE ORGANIC ELECTROLYTE CELL
Arabinda N. Dey, Needham, Mass., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed Sept. 3, 1970, Ser. No. 69,273
Int. Cl. H01m *23/02*
U.S. Cl. 136—83 R **15 Claims**

This invention relates to novel high energy density primary electric cells comprising positive electrodes composed of any of the vanadates of silver, copper, iron, cobalt, nickel, mercury, thallium, lead, bismuth and their mixtures, and negative electrodes composed of a metal selected from the group of light metals, said electrodes being disposed in an electrolyte comprising an organic solvent selected from the group consisting of tetrahydrofuran, N-nitrosodimethylamine, dimethyl sulfite, propylene carbonate, gamma-butyrolactone, dimethyl carbonate, dimethoxyethane, aceto-nitrile and the mixtures thereof, and having dissolved therein soluble salts of the light metals, for example, the perchlorates, hexafluorophosphates, tetrafluoroborates, tetrachloroaluminates, hexafluoroarsenates of lithium.

3,681,144
LITHIUM-METAL SELENIDE ORGANIC ELECTROLYTE CELL
Arabinda Narayan Dey, Needham, and Per Bro, Andover, Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed Sept. 3, 1970, Ser. No. 69,272
Int. Cl. H01m *23/02*
U.S. Cl. 136—83 R **15 Claims**

This invention relates to novel primary electric cells (with extremely flat discharge curves) comprising positive electrodes composed of metal selenides wherein the metals are selected from the group consisting of silver, copper, iron, cobalt, nickel, mercury, thallium, lead, bismuth and the mixtures thereof; and the negative electrodes composed of light metals, said electrodes being disposed in an electrolyte comprising an organic solvent selected from the group consisting of tetrahydrofuran, N-nitrosodimethylamine, dimethyl sulfite, propylene carbonate, gamma-butyrolacetone, dimethyl carbonate, dimethoxyethane, acetonitrile, dimethyl sulfoxide, dimethyl formamide, and mixtures thereof, and having dissolved therein soluble salts of the metals, for example, the perchlorates, hexafluorophosphates, tetrafluoroborates, tetrachloroaluminates, hexafluoroarsenates of lithium.

3,681,145
FUEL CELL BATTERY FOR REACTING A REACTANT, SUCH AS HYDRAZINE ESPECIALLY, DISSOLVED IN ELECTROLYTE
Hans Kohlmuller, Erlangen, and Dieter Kuhl, Bubenreuth, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany
Filed Sept. 9, 1970, Ser. No. 70,765
Claims priority, application Germany, Sept. 11, 1969, P 19 45 945.1
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 R **6 Claims**

Fuel cell battery for reacting a reactant, such as hydrazine especially, dissolved in electrolyte, the same includes a stack of superimposed components A with respective components B and C at opposite ends of the stack thereof, the stack being embedded in a casing of molding resin, the component A comprising a pair of diaphragms with a support frame, a spacer screen, a contact plate, a sealing frame and electrodes of different polarities sandwiched therebetween; the component B comprising a diaphragm and a contact plate with an electrode, a support frame and a sealing frame sandwiched therebetween, and the component C comprising a diaphragm and a contact

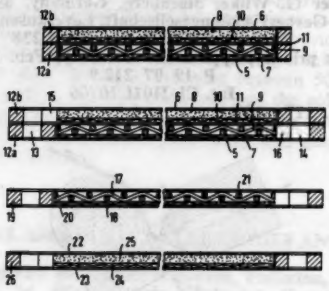
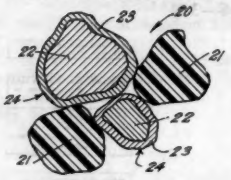


plate with a spacer screen, a sealing frame and an electrode sandwiched therebetween, the sealing frames, the diaphragms and contact plates being provided with fins and formed with bores for supplying the reactants to and discharging the same from the battery, and the sealing frames being firmly bonded to the contact plates and diaphragms of the respective components; and method of producing the fuel cell battery.

3,681,146
METHOD OF MAKING A FUEL CELL ELECTRODE BY THERMAL DECOMPOSITION
Hideo Baba and Masayoshi Gando, Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Division of application Ser. No. 716,718, Mar. 28, 1968, and a continuation-in-part of application Ser. No. 589,340, Oct. 25, 1966. This application Apr. 16, 1969, Ser. No. 836,186
Int. Cl. H01m *13/04*
U.S. Cl. 136—120 FC **5 Claims**



A fuel cell, a fuel cell electrode useful therein and a method of making such electrode are disclosed. The electrode is composed of a mixture of discrete particles of an electrically conductive material coated with metallic silver and discrete particles of a water-repellant polymer bound together therewith and provided with a metallic mesh embedded within the aforesaid mixture to support the same and provide electrical communicating means for use in a gas diffusion electrode. The electrode is made by coating discrete particles of an electrically conductive material, such as nickel powder or carbon powder, with a silver salt which thermally decomposes to metallic silver with evolution of a gas, such as silver carbonate

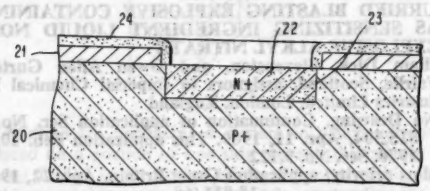
or silver oxalate; forming a mixture of such coated particles with particles of a water-repellant polymer, such as a fluorocarbon polymer; shaping the so-formed mixture into a formed electrode; and subjecting the so-formed electrode to elevated temperatures sufficient to decompose the silver salt to metallic silver, which uniformly coats the conductive material.

3,681,147

METHOD FOR MASKING SEMICONDUCTOR REGIONS FOR ION IMPLANTATION

Vir A. Dhaka, Hopewell Junction, and Andrew F. Kozik, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 22, 1970, Ser. No. 4,966
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 3 Claims



Semiconductors having very narrow base widths can be fabricated by using ion implantation through the contact metallization as a mask, then expanding and passivating the metallization by anodization so as to protect the semiconductor junction.

Aluminum metallization has predictable expansion characteristics as it oxidises or is anodized, and the oxide has insulating properties. This predictable expansion of aluminum oxide permits a dynamic control of the size and shape relationship between adjacent semiconductive regions such as emitter and base or base-collector. The expansion of the contact metallization provides a mask opening with closely corresponding dimensions and permits very close control of narrow semiconductor regions.

3,681,148

PROCESS FOR THE APPLICATION OF THIN, CONTINUOUS PHOSPHATE LAYERS ON METAL SURFACES

Rudolf Wagenknecht, Cologne, Lindenthal, Hans Gotta, Weiden, Brigitte Spei, Herborn, and Karl-Heinz Gottwald, Hurth, Germany, assignors to Gerhard Collardin G.m.b.H., Cologne-Ehrenfeld, Germany

No Drawing. Continuation of abandoned application Ser. No. 710,760, Mar. 6, 1968. This application Dec. 1, 1970, Ser. No. 94,203
Claims priority, application Germany, Mar. 10, 1967, C 41,731
Int. Cl. C23f 7/10
U.S. Cl. 148—6.15 Z 5 Claims

A process for the application of continuous phosphate coatings on iron, steel and zinc surfaces. The layers are of a thickness of one micron or less and are of particular hardness. These coatings are produced by spraying on the metal surfaces an aqueous solution containing, aside from zinc-, phosphate- and nitrate ions, NO_2^- ions, water-soluble glycerophosphate and nonionic detergents, all in predetermined amounts in very narrow limits. For the coating of zinc surfaces, an addition of a fluoro-complex is opportune. The ratio of total acid to free acid is to be held at 8 to 12. In the process according to the invention, a pretreatment, e.g., degreasing, not only is not required but actually may be deleterious. Phosphate layers of 0.5 micron readily can be attained.

3,681,149

PROCESS FOR CHEMICALLY FORMING OXIDE FILMS ON THE SURFACES OF ALUMINUM AND ALUMINUM ALLOYS

Hikaru Ito, Green Haitsu, 95–20, Katsuragi-machi, Kishiwada-shi, Osaka, Japan

No Drawing. Filed Feb. 25, 1970, Ser. No. 14,239
Int. Cl. C23f 7/06
U.S. Cl. 148—6.27 5 Claims

A process for chemically and not electrolytically forming a thick, weather-resistant, anti-corrosive oxide film on the surfaces of aluminum and aluminum alloys in a shorter period than electrolytically, which comprises completing the primary reaction for forming aluminum hydroxide film on the surface of aluminum or aluminum alloy and the secondary reaction for forcibly oxidizing and dehydrating the aluminum hydroxide film to convert it into aluminum oxide film simultaneously in a solution.

3,681,150

FAST COLD QUENCH OIL FOR METALS

Phillip W. Brewster, Wyoming, Ontario, and John M. MacDonald, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company

No Drawing. Filed May 25, 1970, Ser. No. 40,424
Int. Cl. C21d 1/50, 1/58
U.S. Cl. 148—29 5 Claims

A quench oil of high quenching speed particularly useful for the quenching of steel comprises a major proportion of a hydrocarbon oil of lubricating oil viscosity range and a minor proportion of a petroleum hydrocarbon resin that has been treated with a fine dispersion of metallic sodium or related alkali metal.

3,681,151

METHOD OF PRODUCING A BASIC POWDER FOR PERMANENT MAGNETS

Hendrik Cornelis Donkersloot and Johannes Hendrikus Nicolaas van Vucht, Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 23, 1971, Ser. No. 127,144
Claims priority, application Netherlands, Apr. 18, 1970, 7005646
Int. Cl. H01f 1/06
U.S. Cl. 148—105 1 Claim

Method of producing a basic powder for permanent magnets. The powder is formed by the compound M_5R, wherein M=Co, combined, as the case may be, with Fe, Ni, Cu and R is an element of the rare earths including Th. The essential feature of the method is that the powder is obtained by grinding in a hydrogen atmosphere. The advantage is that improved combinations of orientability and coercive force are obtained in that (a) the coercive force as a function of the grinding period increases very rapidly; and (b) the maximum obtainable coercive force is higher.

The permanent magnets manufactured by means of this basic powder are superior to those obtainable by the known grinding methods with respect to the combination of $(BH)_{max}$ and H_c.

3,681,152

METHOD OF SILICONIZING

William E. Staley, Natrona Heights, and Stuart L. Ames, Sarver, Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 811,873, Apr. 1, 1969. This application Mar. 25, 1971, Ser. No. 128,161
Int. Cl. H01f 1/16
U.S. Cl. 148—113 9 Claims

A method of treating grain oriented silicon steel, which comprises the steps of: heating grain oriented silicon steel at a temperature of from about 1900° F. to about 2300°

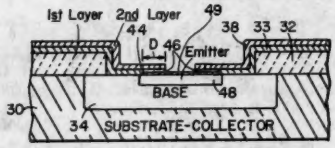
F.; subjecting the steel to an acidic atmosphere which preferentially removes iron, thus enriching the member with silicon, for a period of time sufficient to increase the total proportion of silicon in the steel by about 0.4 to 4 wt. percent; and homogenizing the steel at a temperature and for a time sufficient for the silicon to disperse itself substantially uniformly therein.

3,681,153

PROCESS FOR FABRICATING SMALL GEOMETRY HIGH FREQUENCY SEMICONDUCTOR DEVICE

Lowell Clark, Phoenix, and Douglas L. Elgan, Tempe, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 5, 1970, Ser. No. 680
Int. Cl. H01l 7/44
U.S. Cl. 148—187 5 Claims



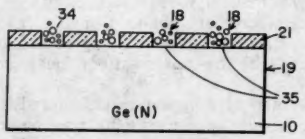
Disclosed is an improved high frequency shallow junction PN semiconductor device and process for making same. A multilayer diffusion mask having a differential etch rate is provided by a controlled etching process, so that the lower layer of the mask limits the lateral extent to an impurity diffusion to form a shallow PN junction within the device. An upper layer of the mask serves to protect the shallow PN junction against electrical shorting during a metal deposition step to form an electrode for the semiconductor device.

3,681,154

METHOD OF DIFFUSING IMPURITIES INTO SELECTED AREAS OF A SEMICONDUCTOR

Clark L. Ashton and Robert G. Hays, Scottsdale, and Ronald C. Pennell, Mesa, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 11, 1970, Ser. No. 36,310
Int. Cl. H01l 7/36
U.S. Cl. 148—187 22 Claims



A method of diffusing an N or P type dopant into a semiconductor body and a method of selectively diffusing an N or P type dopant into a semiconductor body by carrying out, in selected areas, a localized chemical reaction involving the halide of the dopant and the semiconductor material. Localization, using a silicon dioxide mask having windows therein, formed by photolithographic techniques, is achieved with germanium and P type dopants such as aluminum, gallium and indium by carrying out the displacement reaction between germanium and the trichloride of the dopant in a reducing ambient such as hydrogen at a temperature below the melting point of germanium and at substantially atmospheric pressure.

3,681,155

ALUMINUM DIFFUSIONS

Douglas L. Elgan, Tempe, and Robert G. Hays, Scottsdale, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed June 25, 1970, Ser. No. 49,601
Int. Cl. H01l 7/02
U.S. Cl. 148—188 8 Claims

A method of diffusing aluminum is disclosed. A layer of aluminum oxide on a semiconductor body is heated in a hydrogen atmosphere whereby aluminum from the aluminum oxide diffuses into the semiconductor body. This invention includes the simultaneous diffusing of aluminum from the aluminum oxide layer and a second dopant through an opening in the aluminum oxide layer whereby the two dopants diffuse into the semiconductor body.

3,681,156

SLURRIED BLASTING EXPLOSIVE CONTAINING AS SENSITIZING INGREDIENT LIQUID NON-EXPLOSIVE ALKYL NITRATE

William Dick, Stevenston, and Owen Allen Gurton, Fairlie, Scotland, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation of application Ser. No. 815,504, Apr. 11, 1969. This application Feb. 10, 1970, Ser. No. 9,122
Claims priority, application Great Britain, Apr. 22, 1968, 18,831/68
Int. Cl. C06b 15/00
U.S. Cl. 149—22 15 Claims

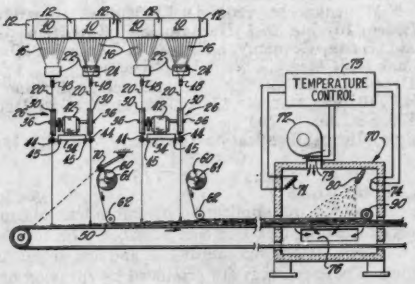
This invention relates to an improved blasting explosive of the kind known as slurried explosive wherein a water-soluble oxidising salt and fuel are suspended in an aqueous medium containing as a sensitizing ingredient, a liquid non-explosive organic nitrate, i.e., isopropyl nitrate or amyl nitrate.

3,681,157

METHOD FOR FORMING AN INTEGRATED MASS

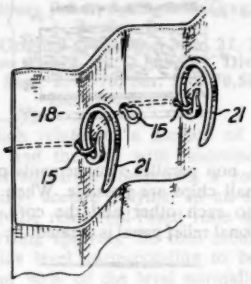
George E. Smock, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation

Continuation of application Ser. No. 785,045, Dec. 12, 1968, which is a continuation of application Ser. No. 517,225, Dec. 29, 1965. This application Mar. 12, 1970, Ser. No. 18,372
Int. Cl. B32b 17/00
U.S. Cl. 156—62.2 4 Claims



Method for forming fibrous mats or integrated fibrous masses for a collection of linear bodies by providing a plurality of mat-like layers which may result from the deposition of linear bodies on a collecting surface, interleafing binder in film form between the layers, and activating the film to disperse the binder among the individual bodies to bind them into an integrated fibrous mass, such as air filter mats, insulating mats, or the like.

3,681,158
CURTAINS
James Douglas Foggo, Cheadle Hulme, England, assignor to Thomas French & Sons Limited
Filed Mar. 17, 1969, Ser. No. 807,903
Claims priority, application Great Britain, Apr. 18, 1968, 18,374/68
Int. Cl. B32b 3/04
U.S. Cl. 156—70 14 Claims



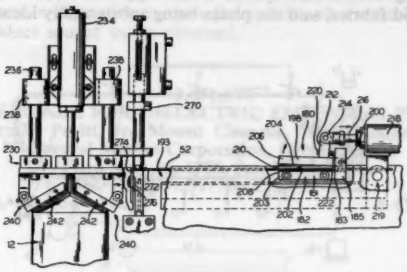
Method for producing a curtain in which adhesive is placed on a portion of one side thereof, the curtain then being folded in the region of the adhesive within which fold suspension means to be used for suspending the curtain is mounted.

3,681,159
REGISTERED PRINTING AND EMBOSSING OF LAMINATED BOARDS
Allen J. Portnoy, Ladue, and William L. Mundy, Clayton, Mo., assignors to Permaneer Corporation, St. Louis, Mo.
Filed Mar. 10, 1969, Ser. No. 805,703
Int. Cl. B31f 1/20
U.S. Cl. 156—209 9 Claims

A method of and apparatus for producing a textured printed surface on laminated boards by printing and embossing in registration. Registration of the printing and embossing is achieved by providing printing and embossing rolls of identical diameter and driving them at identical rotational speeds, such as from a single power source. Printing and embossing are repeated by continuous rotation of printing and embossing rolls but, since boards are fed to the printing and embossing rolls at random and since the repeat cycles of the rolls do not correspond to the lengths of the boards, the printed and embossed patterns appear to be realistically random on successive boards.

3,681,160
METHOD FOR OVER-LABELING GABLE TOPPED CONTAINERS
Edward H. Richie, 4327 Elm St., and John F. McAlpine, P.O. Box 337, 1220 Lincoln St., both of Downers Grove, Ill. 60515
Original application Jan. 19, 1968, Ser. No. 699,155, now Patent No. 3,558,403. Divided and this application June 1, 1970, Ser. No. 54,047
Int. Cl. G09f 3/10
U.S. Cl. 156—212 2 Claims

The invention is concerned with a method and apparatus for over-labeling gable top containers or cartons for milk and the like in which the containers are fed past a labeling station at which they are consecutively halted for application thereto of the label across the top thereof. A strip of labels is intermittently fed from a roll, in timed sequence to the presence of a container to be labeled at said labeling station, to dispose the label forming segment of the strip in label applying position over the halted container, after which the label is severed from the strip and pressed against the container top to apply it thereto,

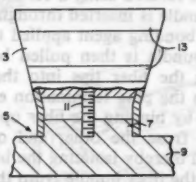


with the label being oriented to extend transversely of the container peak.

3,681,161
PROCESS FOR BONDING CYLINDRICALLY-SHAPED ARTICLES
Everitt Franklin Wood, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 23, 1969, Ser. No. 835,392
Int. Cl. B29c 17/00
U.S. Cl. 156—285 2 Claims

An annular gluing clamp having an annular inwardly facing pressure chamber the inner wall of which is defined by a flanged elastomeric ring and a process of assembling rim core grinding wheels and similar glued rim core, by inserting a curable adhesive between the rim and core, mounting the rim and core in the clamp, pressuring the clamp and curing the adhesive.

3,681,162
ANTENNA FABRICATION METHOD
Warren D. Williams, Walden, Loring B. Andrews, Saranac Lake, and Frank Bader, Stony Brook, N.Y., assignors to the United States of America as represented by the Secretary of the Army
Filed Dec. 27, 1968, Ser. No. 787,574
Int. Cl. H01p 11/00; H01q 13/00
U.S. Cl. 156—289 4 Claims

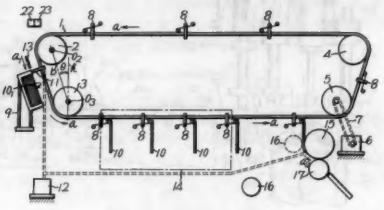


A plurality of antenna horns are arranged in an assembly tool, an adhesive film is applied between the horns and the entire assembly is placed in an oven to cure.

3,681,163
METHOD FOR APPLYING ADHESIVE TO MARGINAL EDGES OF FABRICS AND BONDING SAME
Hiroshi Ohashi, 54 Tsuragaoka, Ohi-machi, Iruma-gun, Saitama-ken, Japa
Filed June 3, 1969, Ser. No. 829,867
Claims priority, application Japan, July 22, 1968, 43/51,156; Apr. 30, 1969, 44/33,817
Int. Cl. B29h 7/04; B32b 7/14
U.S. Cl. 156—291 3 Claims

A method for applying an adhesive to marginal edges of fabrics, in which stacked base fabrics are provided, each

of the base fabrics being identical in configuration; said stacked base fabrics are clamped by clamping means comprising die plates disposed on the upper and lower sides of said fabrics, said die plates being substantially identical

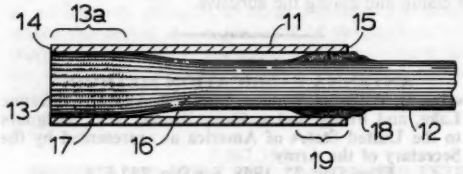


in shape to said base fabrics; an adhesive is applied to said base fabrics at marginal edges thereof; and said stacked base fabrics are removed two at a time and pressed together to seal at their edges.

3,681,164
HIGH TEMPERATURE TERMINATION FOR FIBER OPTIC BUNDLE

Wilfred P. Bazinet, Jr., Webster, and John E. Salce, Southbridge, Mass., assignors to Noma-World Wide, Inc., Chicago, Ill.

Filed Apr. 7, 1969, Ser. No. 814,102
Int. Cl. B32b *1/00*; G02b *5/16*
U.S. Cl. 156—294 **7 Claims**



A fiber optic termination suitable for higher temperature applications is formed using a ceramic-based bonding agent; the fiber bundle is inserted through the termination end plug and the bonding agent applied to the tips of the fibers; the fiber bundle is then pulled back through the plug withdrawing the fiber tips into the plug until the tips are flush with the plug termination end; the termination is completed by binding the fiber optic bundle in the portion emerging from the other end of the plug with an elastic material thereby isolating the brittle ceramically bonded region of the fiber bundle from the flexing portion of the bundle.

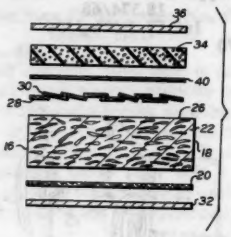
3,681,165
METHOD OF MAKING A THREE-DIMENSIONAL MULTILAYER PANEL

Andrew E. Carmellini, Brookfield, and Robert E. James, Danbury, Conn., assignors to U.S. Plywood-Champion Papers Inc., New York, N.Y.

Filed July 15, 1970, Ser. No. 54,881
Int. Cl. B32b *13/10*
U.S. Cl. 156—297 **7 Claims**

A method of making a three-dimensional multilayer panel for use as doors, walls, and partitions, etc. It can feature use of waste veneer as well as good veneer for its face material to make a strong, lightweight panel with an attractive textured decorative surface.

The core is formed of agglomerated relatively large size wood particles, with a rear face or backing veneer of low grade sheets. On the front of the core, there are a number of elongated veneer strips laid on the core to overlay each other marginally and randomly but parallel one to the other so there is no planar surface. This is a pre-



ferred design, non parallel arrangements of veneer strips as well as small chips are possible. When these elements are bonded to each other and the core, a bold actual three dimensional relief panel is created.

3,681,166
HEAT SEALING OF POLYSTYRENE

Robert J. Caiola, Saginaw, and Cleown A. Leatherman, Shepherd, Mich., assignors to The Dow Chemical Company, Midland, Mich.

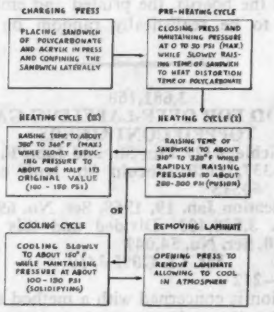
No Drawing. Filed Apr. 23, 1969, Ser. No. 818,788
Int. Cl. C09j *5/02*
U.S. Cl. 156—308 **10 Claims**

Sheets of styrene polymer are sealed at temperatures lower than the heat distortion temperature of the polymer by applying to a surface of the sheet a relatively volatile liquid which is essentially insoluble in the polymer at room temperature and slightly soluble in the polymer at the temperature used to seal the sheet. By sealing sheets of styrene polymers in accordance with this method, problems which normally result from heat sealing such sheets at high temperatures are avoided.

3,681,167
METHOD OF MAKING ACRYLIC-POLYCARBONATE LAMINATE

Richard E. Moore, R.D. 1, Locust Grove Road, West Chester, Pa. 19380

Filed July 13, 1970, Ser. No. 54,186
Int. Cl. C09j *5/06*
U.S. Cl. 156—311 **6 Claims**


CHARGING PRESS
PLACING SANDWICH OF POLYCARBONATE AND ACRYLIC IN PRESS AND CONFINING THE SANDWICH LATERALLY
PRE-HEATING CYCLE
CLOSING PRESS AND MAINTAINING PRESSURE AT 0 TO 30 PSI (MAX.) WHILE SLOWLY RAISING TEMP. OF SANDWICH TO HEAT DISTORTION TEMP OF POLYCARBONATE
HEATING CYCLE (II)
RAISING TEMP TO ABOUT 300° TO 360° F (MAX.) WHILE SLOWLY REDUCING PRESSURE TO ABOUT ONE HALF (½) ORIGINAL VALUE (100 - 150 PSI)
HEATING CYCLE (I)
RAISING TEMP OF SANDWICH TO ABOUT 310° TO 330° F WHILE RAPIDLY RAISING PRESSURE TO ABOUT 250-300 PSI (FUSION)
OR
COOLING CYCLE
COOLING SLOWLY TO ABOUT 100° F WHILE MAINTAINING PRESSURE AT ABOUT 100-150 PSI (SOLIDIFYING)
REMOVING LAMINATE
OPENING PRESS TO REMOVE LAMINATE ALLOWING TO COOL IN ATMOSPHERE

A method of forming a laminate of cast monomeric acrylic resin sheets having a core of extruded polycarbonate resin sheet comprises confining the sheets laterally, maintaining the external faces in contact with mirror polished plates, preheating the sandwich to the distortion temperature of the polycarbonate while applying a low pressure to expel entrapped air, increasing the

pressure to about 200–300 p.s.i., maintaining the temperature at the fusion temperature of the plastic sheets to bond them, and cooling to about 150° F. while maintaining the pressure at about 100–150 p.s.i., thereby providing a laminate with good optical properties.

3,681,168

BONDING WITH VINYL ACETATE POLYMER MODIFIED RESORCINOL-BASE ADHESIVE

Edgar Braddbury Baker, Springfield, Oreg., assignor to Borden, Inc.

No Drawing. Original application Mar. 21, 1969, Ser. No. 809,391, now Patent No. 3,600,353. Divided and this application Sept. 8, 1970, Ser. No. 70,582
Int. Cl. C09j *3/14*
U.S. Cl. 156—332 5 Claims

This invention relates to a method of gluing wood, wood articles and the like with resorcinol-based resin adhesives, said adhesives comprising a resorcinol-based resin and a vinyl acetate polymer in an amount up to about 10% of the resorcinol-based resin solids and the method comprising applying the thus modified adhesive at a total solids level corresponding to between about 80% and about 90% of the level normally required in the case of resorcinol-based resin adhesives not containing vinyl acetate polymers whereby boil-proof and weather-resistant bonds are created not substantially different from the bonds obtainable with the unmodified resorcinol-based resin under the same conditions of assembly and cure.

ERRATUM

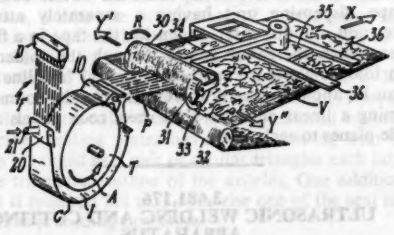
For Class 156—344 see:
Patent No. 3,681,139

3,681,169

APPARATUS FOR THE CONTINUOUS MANUFACTURE OF WICKS, THREADS AND SCREENS FROM THERMOPLASTIC MATERIALS

Valentino Wiquel, Besana Brianza, Italy, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France

Filed Nov. 13, 1968, Ser. No. 775,483
Claims priority, application Italy, Nov. 20, 1967, 22,915/67; Nov. 22, 1967, 22,981/67
Int. Cl. B29j *5/00*
U.S. Cl. 156—371 27 Claims



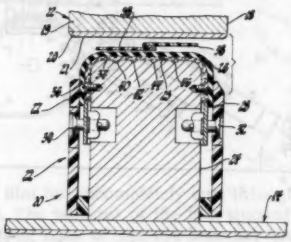
The production of continuous lengths of mats, screens, wicks and the like, from thermoplastic fibrous material, particularly glass fibers, by dropping a plurality of freshly formed filaments issuing from a high-capacity spinneret containing the molten material into a passage defined by a horizontally disposed rotatable drawing-out drum and a casing spaced from and surrounding substantially the lower portion of the drum. Air currents in the passage, coupled with the rotation of the drum, result in an attenuation and orientation of the fibers within the passage, and they are diverted from the outlet of the passage by at least one layer of air directed in a plane parallel to the rotary axis of the drum and in intersecting relation to the air currents issuing from the passage with the fibers entrained therein, to divert the latter from the drum onto a receiving surface therefor, which may assume different forms in dependence upon the specific character of the product sought to be obtained.

3,681,170

DIE BLADE FOR DIELECTRIC EMBOSSING PRESS

Herman Pevitt, Jr., Mount Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 26, 1970, Ser. No. 40,534
Int. Cl. B29c *27/04;* B32b *31/20*
U.S. Cl. 156—360 4 Claims



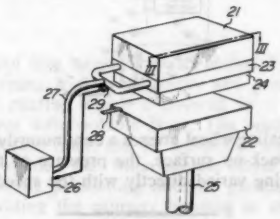
A die blade construction for use in a dielectric embossing press that includes a sheet of resilient insulating material secured to the pressure surface and covering the entire area thereof for minimizing arcing. In addition, a layer of foam metal is interposed between the insulating material and the pressure surface for filling any irregularities in the latter and providing an embossing surface in exact conformity with the embossing surface of the mating die blade.

3,681,171

APPARATUS FOR PRODUCING A MULTILAYER PRINTED CIRCUIT PLATE ASSEMBLY

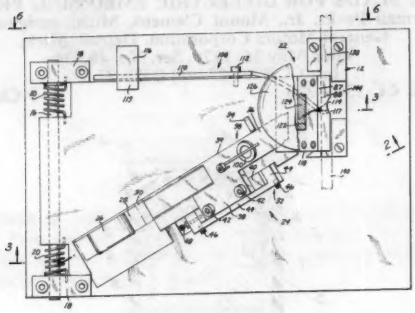
Toku Hojo, Yokohama, Toshio Sasaki, Kamakura-shi, Hiroshi Motojima, Yokohama, and Hideaki Sasaki, Hatano-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 7, 1969, Ser. No. 848,191
Claims priority, application Japan, Aug. 23, 1968, 43/59,894
Int. Cl. B32b *31/00*
U.S. Cl. 156—382 1 Claim



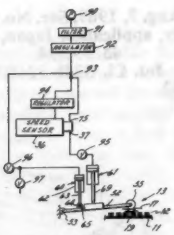
A method and apparatus for producing a multilayer printed circuit plate assembly consisting of a laminate of a plurality of printed circuit plates, each having circuits formed on one or both surfaces thereof by etching, and at least one adhesive layer interposed between adjacent ones of said printed circuit plates, in which an air-tight sealed chamber is formed enclosing said laminate by means of a vacuum packing jig means and said laminate is compressed and heated in said sealed chamber while exhausting air from said sealed chamber by a vacuum pump, whereby the formation of air bubbles in each adhesive layer in the process of compression and heating is prevented.

3,681,172
STRIP FEEDING AND CUTTING MECHANISM
Gasper Cafiero, Brooklyn, N.Y., assignor to Metra Electronics Corporation, Brooklyn, N.Y.
Filed Apr. 22, 1970, Ser. No. 30,664
Int. Cl. B31f *5/06;* G03d *15/04*
U.S. Cl. 156—506 24 Claims



Splicing apparatus comprising a strip feeding and cutting mechanism for use with a strip of adhesive tape wherein a segment of tape is fed, severed and affixed to the material to be spliced in one operation. The apparatus comprises a punch mechanism and means for automatically feeding a segment of tape to said punch mechanism in response to the plunger stroke thereof.

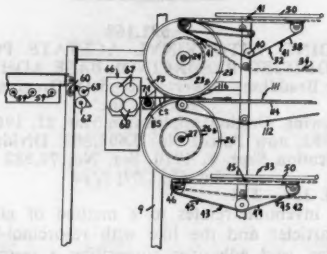
3,681,173
HEAT SEALING OF THERMOPLASTIC FILMS
Wickliffe Jones, Cincinnati, Ohio, assignor to R. A. Jones & Company, Inc., Covington, Ky.
Filed Apr. 13, 1970, Ser. No. 27,918
Int. Cl. B32b *31/20, 31/02*
U.S. Cl. 156—555 8 Claims



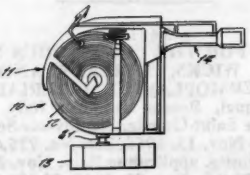
A heat sealing wheel presses a continuously moving film against a back-up surface, the pressure of the wheel on the film being varied directly with the speed of the film.

3,681,174
APPARATUS FOR AUTOMATICALLY LAYING UP PLYWOOD PANELS
Harold A. Keller and Patrick J. Young, Lewiston, Idaho, assignors to Potlatch Forests, Inc., San Francisco, Calif.
Original application Apr. 9, 1969, Ser. No. 814,581. Divided and this application Jan. 25, 1971, Ser. No. 109,495
Int. Cl. B32b *31/10, 31/12*
U.S. Cl. 156—559 7 Claims

An apparatus for automatically laying up plywood panels, particularly three ply, is described in which the front and back veneer sheets are fed crosswise by a core feeding section to respective parallel vacuum drum assemblies that are rotated in opposite directions. The drums bend the sheets about the peripheries thereof and move the sheets in a 180° path to converge between the drum assemblies. A core sheet is fed between the drum assemblies to interpose between the front and back sheets. The front, core and back sheets are fed in a timed relation to align the leading edges of the sheets as they converge.



3,681,175
DRY WALL TAPE FOLDER THAT FOLDS TAPE FOR CORNERS WHEN TAPING SHEET ROCK
Delmer J. Cote, 624 Arch St., New Britain, Conn. 06051
Filed June 17, 1970, Ser. No. 47,018
Int. Cl. B32b *31/12, 31/20*
U.S. Cl. 156—576 3 Claims

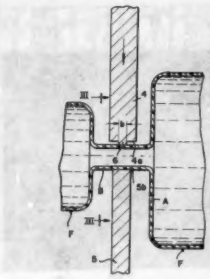


A tape device for securing tape between sheet rocks junctioning at corners of a room, the device comprising a tape dispensing unit having a separately attachable folder unit, the dispenser dispensing the tape in a flat condition which thereafter passes through the folder which then folds it along a longitudinal central fold line so that it can be applied directly therefrom into the room corner forming a linear edge between sheet rock panels at right angle planes to each other.

3,681,176
ULTRASONIC WELDING AND CUTTING APPARATUS
Hans Reifenhauser, Troisdorf, and Paul Reitemeyer, Bergheim, Germany, assignors to Reifenhauser, KG, Troisdorf, Germany
Filed Aug. 15, 1969, Ser. No. 850,569
Claims priority, application Germany, Aug. 23, 1968, P 17 79 534.5
Int. Cl. B29c *27/08;* B32b *31/16, 31/18*
U.S. Cl. 156—580 7 Claims

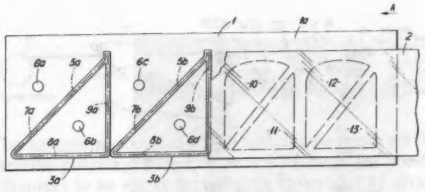
An apparatus for the ultrasonic welding and cutting of a pair of juxtaposed synthetic-resin sheets has a sonotrode and an anvil, one being engageable with the other, upon their relative movement toward one another. Mounted on the anvil or sonotrode is a spacer element in the form of a ridge running along the middle of the welding face

of the tool. This ridge has a height that is slightly less than the combined thickness of the two sheets so that when the spacer ridge engages the opposite welding face



it cuts the sheets while the surfaces of the face blanking the spacer ridge coact with the opposite face to form a welded seam.

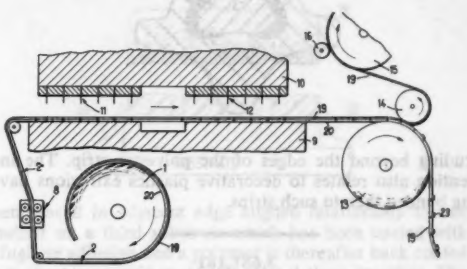
3,681,177
PACKING APPARATUS
Leslie Raymond Preston, London, Victor James Pope, Great Missenden, John Stagg, Fulmer, and Ronald Sydney Green, High Wycombe, England, assignors to W. R. Grace & Company, New York, N.Y.
Filed Apr. 26, 1971, Ser. No. 137,369
Int. Cl. B30b *15/34*; B65b *7/04*
U.S. Cl. 156—583 **8 Claims**



The specification discloses packing articles, in this case sandwiches, where the articles are of a triangular form and packing is effected by placing at least two pairs of the articles side by side between the layers of a single web of centre-folded film. The articles are arranged to have the same orientation with one side of the triangle parallel to the film centre-fold. Sealing may be effected by bringing together sealing plates having co-operating heat seal elements arranged as a pair of similar triangles each larger than the triangular outline of the articles. One additional seal line is required but may comprise one of the seal lines of a similar preceding operation.

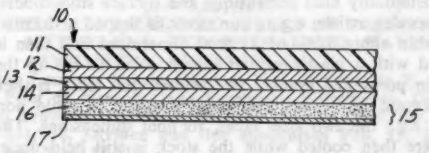
3,681,178
METHOD FOR MANUFACTURING PREFORMED EYE-LINES FOR EYE-LIDS
Marcel Hidore Margulies, Antwerp, Belgium, assignor to Bridal AG, Alpenstrasse, Zug, Switzerland
Filed Feb. 12, 1970, Ser. No. 10,913
Claims priority, application Switzerland, May 8, 1969, 7,087/69
Int. Cl. B32b *31/08, 31/18*
U.S. Cl. 156—584 **10 Claims**

Preformed eye-lines for sticking to the eye-lids and having a contour formed by two curved lines tapering to a point at each end of the eye-line are produced by a method comprising punching out the eye-line by two successive incisions from a self-adhering film adhering with its adhesive side to a backing material. One of said curved lines is cut by the first incision and the other curved line by the second incision. Each incision completely cuts



through the film but incompletely cuts through the backing material. The portions of the film situated outside of the cut contour lines of the eye-lines are then stripped from the backing material and the backing material with the eye-lines adhering thereon are cut into suitable lengths and packed for sale.

3,681,179
MOISTURE-RESISTANT SOLAR CONTROL FILM
Donald R. Theissen, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.
Continuation-in-part of application Ser. No. 678,013, Oct. 25, 1967. This application July 20, 1970, Ser. No. 56,379
Int. Cl. B44f *1/00*; A61l *15/06*
U.S. Cl. 161—4 **11 Claims**

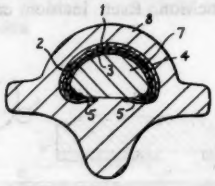


Solar control film having a water-activatable adhesive system comprising a normally tacky and pressure-sensitive adhesive coating which is covered by a thin tack-free continuous water-soluble layer. The product, which does not require a liner, can be moistened and installed on a windowpane, the water-soluble layer providing lubrication during positioning and the pressure-sensitive adhesive providing the primary bonding to the glass.

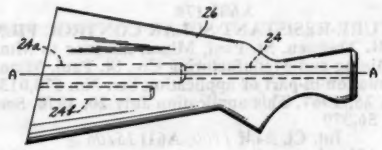
3,681,180
DECORATIVE PLASTICS STRIPS AND EXTRUSIONS
Cecil Kent, Woking, England, assignor to Creators Limited, Surrey, England
Filed July 28, 1969, Ser. No. 845,155
Int. Cl. B32b *3/04*; B60r *19/00*
U.S. Cl. 161—5 **5 Claims**

This invention relates to decorative plastics strips having a surface displaying a metallised finish. As described, the metallised surface of a strip of transparent or translucent polyester film is laminated to a thin backing layer of polyvinyl chloride, and a second strip of transparent

or translucent polyvinyl chloride film, which is wider than the polyester strip, is laminated to the unmetallised surface of the polyester film with its marginal edge zones protruding beyond the edges of the polyester strip. The invention also relates to decorative plastics extrusions having bonded thereto such strips.



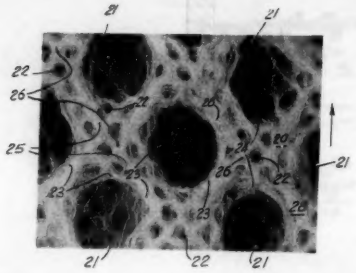
3,681,181
COMPRESSION MOLDING OF WOODEN ARTICLES
Harold L. Hameister, Richfield Springs, N.Y., and Erwin Reitter, Jr., Wilmington, Del., assignors to Remington Arms Company, Inc., Bridgeport, Conn.
Original application Oct. 25, 1968, Ser. No. 770,527, now Patent No. 3,562,376. Divided and this application June 5, 1970, Ser. No. 57,400
Int. Cl. B32b *1/04*
U.S. Cl. 161—41 **1 Claim**



A wooden article having a curved and varying cross-section and a process of compression molding the article to substantially final dimensions and surface smoothness. The wooden article, e.g., a gun stock, is shaped or formed to within about 10% of its final dimensions and then is treated with a plastic primer means so as to fill up the surface pores and cracks. The primed gun stock is then compressed by heated dies under pressure to mold portions, e.g., the two side faces, to final dimensions. The dies are then cooled while the stock is still held under compression and then the dies are released and the stock removed. The sequence is repeated with a second set of dies which are adapted to compression mold the non-molded portions and to overlap the original molded surface so as to blend in the final surface and thus avoid any flashing. The stock can also be checkered during one of the compression molding operations.

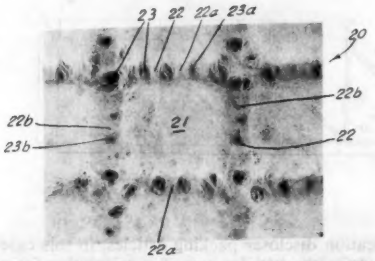
3,681,182
NONWOVEN FABRIC COMPRISING DISCONTINUOUS LARGE HOLES CONNECTED BY FIBER BUNDLES DEFINING SMALL HOLES
Frank Kalwaites, Somerville, N.J., assignor to Johnson & Johnson
Filed Mar. 24, 1970, Ser. No. 22,289
Int. Cl. D04h *1/46, 1/70*
U.S. Cl. 161—109 **16 Claims**

A nonwoven fabric having a plurality of patterns of apertures or holes or other areas of low fiber density which alternate and extend throughout the fabric. One of the patterns of areas of low fiber density is defined by yarn-like bundles of fiber segments and the other pattern of areas of low fiber density is also defined by yarn-like bundles of fiber segments. The first pattern of areas of low fiber density is disposed in discontinuous portions of the fabric and the second pattern of areas of low fiber density is disposed in continuous portions of the fabric lying between each pair of adjacent areas of low fiber



density in the first pattern. The areas of low fiber density in the first pattern are at least four times larger than the areas of low fiber density in the second pattern. Some of the yarn-like bundles of fiber segments in the fabric are of heavier weight than other such bundles.

3,681,183
NONWOVEN FABRIC COMPRISING ROSEBUDS CONNECTED BY BUNDLES
Frank Kalwaites, Somerville, N.J., assignor to Johnson & Johnson
Filed Mar. 24, 1970, Ser. No. 22,292
Int. Cl. D04h *1/46, 1/70*
U.S. Cl. 161—109 **7 Claims**

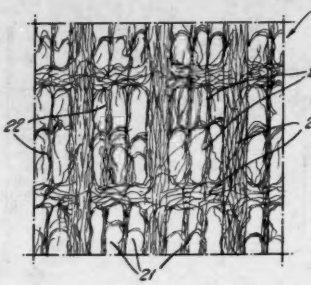


A nonwoven fabric having a plurality of patterns of groups of fiber segments that alternate and extend throughout the fabric. One of the patterns, disposed in discontinuous portions of the fabric, consists of fiber segments which are interentangled and in helter-skelter arrangement and protrude out of the plane of the fabric. These discontinuous portions of the fabric are interconnected by a plurality of yarn-like bundles of fiber segments which define apertures or holes or other areas of low fiber density in continuous portions of the fabric to form a second pattern.

3,681,184
NONWOVEN FABRICS COMPRISING BAMBOO, DIAMOND AND THE LIKE PATTERNS
Frank Kalwaites, Somerville, N.J., assignor to Johnson & Johnson
Filed Mar. 24, 1970, Ser. No. 22,300
Int. Cl. D04h *1/46, 1/70*
U.S. Cl. 161—109 **9 Claims**

A nonwoven fabric having a plurality of patterns of groups of fiber segments that alternate and extend throughout the fabric. One of the patterns comprises a

plurality of yarn-like bundles of fiber segments that define apertures or holes or other areas of low fiber density located in discontinuous portions of the fabric. The discontinuous portions of the fabric are bounded around their perimeters by a second continuous pattern of yarn-like bundles of fiber segments.



3,681,185

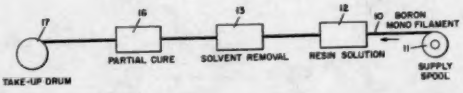
FILAMENT STRUCTURE AND PROCESS COMPRISING COATED BORON FILAMENTS

Leonard L. Gelb, Cumberland, Md., assignor to Hercules Incorporated, Wilmington, Del.

Original application Nov. 13, 1968, Ser. No. 775,254, now Patent No. 3,578,489. Divided and this application Oct. 21, 1970, Ser. No. 82,823

Int. Cl. B32b *3/14, 15/02*

U.S. Cl. 161—143 4 Claims



The invention provides (1) boron filament coated with a phenolic-polyvinyl acetal resin as a medium for bonding the filament to an epoxy type matrix material, (2) process for manufacture of the above coated boron filaments involving contact of bare boron filaments with a solution of said resins to wet the filament, regulating thickness of the resulting solution layer to provide the residual resin coating sought, removing solvent from the wetting layer, and partially curing residual solid resin as the resin coating, (3) broad goods comprising mat product of filamentary winding of the above described resin coated boron filaments, (4) method for forming a specific coating solution for the bare filaments, involving forming a separate solution of each of the resins in predetermined resin proportions and concentrations, and then admixing the two separate solutions to form the product solution and (5) resulting coating solution of 5–20 weight percent total resin content, in a phenolic resin to polyvinyl acetal resin weight ratio of from about 0.25:1 to 18:1.

3,681,186

MULTICOLORED UNITARY SELF-SUPPORTED POLYMER MATRIX TRANSFER MEDIUM

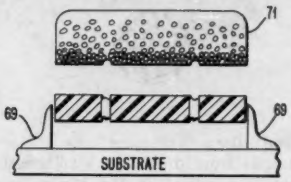
Hugh T. Findlay and Jerry F. Stone, Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,744

Int. Cl. B32b *5/20*

U.S. Cl. 161—166 6 Claims

A multicolor transfer medium is provided by a process which comprises making a first matrix material by mixing a fluid transfer ink of a first color with a solution of a film forming polymer in a solvent for the polymer, coating the resulting dispersion on a first substrate and evaporating the solvent to form the matrix material of a first color. A matrix material of a second color is formed in an identical manner utilizing a fluid transfer ink of a second color. The two substrates supporting the matrix materials are



then placed in adjacent edge aligned relationship to one another on a third substrate which has been coated with a fugitive adhesive and a polymer is thereafter back coated over the two matrix materials to seal them together. The resulting unitary multicolored transfer medium is then stripped from the substrates and slit, if required, to a desired width.

3,681,187

CARBON FIBRES EMBEDDED IN GLASS MATRIX

Dennis Herbert Bowen, North Stoke, Oxon, Ronald Alfred James Sambell, Reading, Keith Albert Dale Lambe, Wantage, and Neville John Mattingley, Abingdon, England, assignors to United Kingdom Atomic Energy Authority, London, England

No Drawing. Filed May 1, 1969, Ser. No. 821,130

Claims priority, application Great Britain, May 16, 1968, 23,461/68; Oct. 2, 1968, 46,876/68

Int. Cl. F06b *9/26;* C03c *13/00*

U.S. Cl. 161—170 8 Claims

A novel composite material comprises glass reinforced with carbon fibres. The glass may typically be a borosilicate glass or a nucleated glass. The novel materials is hard and strong, being resistant to mechanical and thermal shock.

3,681,188

HELICALLY CRIMPED FIBERS OF POLY(TRIMETHYLENE TEREPHTHALATE) HAVING ASYMMETRIC BIREFRINGENCE

Max Emerson Harris, Kinston, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application May 10, 1969, Ser. No. 821,084. Divided and this application Feb. 19, 1971, Ser. No. 117,110

Int. Cl. D02g *1/00;* D01d *5/22*

U.S. Cl. 161—173 1 Claim

Helically crimped textile fibers of poly(trimethylene terephthalate) are produced by melt spinning filaments to have asymmetric birefringence across their diameters, drawing the filaments to orient the molecules thereof, annealing the drawn filaments at 100°–190° C. while held at constant length, and heating the annealed filaments in a relaxed condition above 45° C. to develop crimp.

3,681,189

MULTILAYER SYNTHETIC FILAMENT

Masao Matsui, Susumu Tokura, and Masahiro Yamabe, Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed July 23, 1970, Ser. No. 57,522

Claims priority, application Japan, July 31, 1969, 44/60,896

Int. Cl. D01d *5/28*

U.S. Cl. 161—175 20 Claims

Synthetic filament having a multilayer configuration, in which polyamide and/or polyester excluding polypivalolactone and polypivalolactone are layer-multiplied

in the form of a grainy, archipelagic or nebulous configuration at the cross-section of the unitary filament, is manufactured by subjecting said spinning materials to at least 3 times of "joining-dividing in different phase"

repeatedly and then extruding the layer-multiplied spinning materials from orifice on a spinneret. The synthetic filament is excellent in the elastic property and antistatic property.

3,681,190

PRESSURE-SENSITIVE ADHESIVE TAPE

Carl A. Dahlquist, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed May 7, 1970, Ser. No. 35,561

Int. Cl. C09j *7/02*

U.S. Cl. 206—59 C **13 Claims**

Normally tacky and pressure-sensitive adhesive tape having almost no color and excellent resistance to ultraviolet light. The adhesive comprises a blend of at least one elastomeric rubbery polymer and an amount of at least one alkylated polystyrene resin effective to render said polymer tacky.

3,681,191

PAPER PULP DIGESTER BLOWDOWN METHOD

Frank Williams Farrelly, Merrick, N.Y., assignor to Process Evaluation and Development Corporation, New York, N.Y.

Filed Nov. 10, 1970, Ser. No. 88,359

Int. Cl. D21c *7/08*

U.S. Cl. 162—52 **5 Claims**

This invention relates to a method of maintaining a continuous blowdown flow of paper pulp between a pulp digester and a hot stock refiner or other downstream equipment comprising the steps of passing digested pulp material through a modified digester blow valve, trapping large, solid foreign objects thereby preventing said objects from becoming lodged in the orifice of said valve rotating the blow valve, and exerting a fluid pressure on the orifice thus blowing said foreign objects into a blow tank or a trash bin.

3,681,192

SLUICE FEEDERS FOR INTRODUCING FINELY DIVIDED CHIPS INTO VESSELS UNDER PRESSURE

Rolf Bertil Reinhall, Lidingo, Sweden, assignor to Defibrator Aktiebolag, Stockholm, Sweden

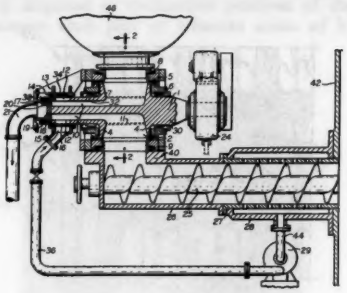
Filed June 13, 1969, Ser. No. 832,893

Claims priority, application Sweden, July 4, 1968, 9,246/68

Int. Cl. D21c *7/06*

U.S. Cl. 162—246 **5 Claims**

A sluice feeder for introducing finely divided vegetable material (hereinafter referred to as "chips") into a pressure vessel, in which the sluice feeder is formed with a rotor encased within a housing having chip inlet and outlet openings, and liquid inlet and outlet openings. The rotor is formed with a plurality of chip receiving pockets extending axially over the rotor. Extending along one of the journals of the rotor in alignment with each pocket is a liquid conducting channel leading from the rotor pocket to the end of the journal. By forming the liquid feed channels to extend along the longitudinal axis of the



journals, to the rotor, the number of rotor pockets for receipt of the chips may be significantly increased.

3,681,193

APPARATUS FOR PRODUCING SEPARATE PAPER WEBS AND COMBINING THEM ON A COMMON POROUS BELT

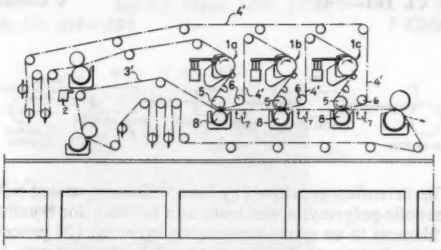
Erik A. Nykopp, Tampere, Finland, assignor to Oy Tampella AB, Tampere, Finland

Filed Feb. 20, 1970, Ser. No. 13,060

Claims priority, application Finland, Mar. 3, 1969, 636/69

Int. Cl. B32b *1/02*; D21f *1/00*; D21h *1/06*

U.S. Cl. 162—304 **3 Claims**



A compound paper machine system for producing multi-layered paper webs which includes several web forming units and a common endless lower wire or felt therebeneath on which the individual webs are deposited. Each web forming unit may comprise a forming cylinder on which slurry is deposited from a headbox and a separate endless wire or felt which laps part of the upper surface of each cylinder and which is guided so as to deposit the individually formed webs onto the common endless lower wire or felt. Optionally the separate lapping wires or felts for each unit can be a single porous belt.

3,681,194

SIGNALING SYSTEM FOR PNEUMATIC INSTALLATIONS IN NUCLEAR REACTORS

Enoui Leopold Dieck, Laurensberg, Germany, assignor to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed Mar. 3, 1969, Ser. No. 803,615

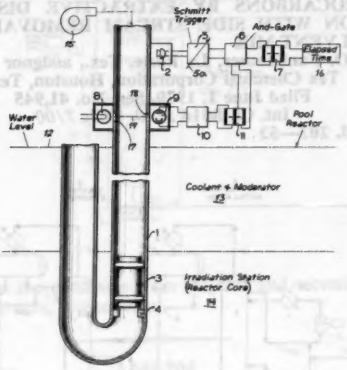
Claims priority, application Germany, Mar. 9, 1968, P 12 84 358.2

Int. Cl. G21c *17/00*

U.S. Cl. 176—19 **10 Claims**

A pneumatic-tube installation for positioning a sample in the flux of a nuclear reactor is provided with a metallic tube extending from a stop for the sample. An electro-acoustical transducer, preferably a microphone, is disposed

along the tube at a location outside the reactor core to detect the sound wave transmitted along the tube upon engagement of the sample with the stop. The output of the transducer is applied through a variable-threshold (amplitude comparator) trigger circuit (Schmitt trigger)



to a switching device whose output, in turn, can initiate a timing cycle. An optical detector ahead of the microphone is connected through an AND-gate designed to enable the switching device so that the system responds only at the sound of impact with the stop.

3,681,195

METHOD OF TREATING YEAST

Mikio Suekane, Saitama-ken, and Chikako Satake, Tokyo, Japan, assignors to CPC International Inc.

No Drawing. Filed Feb. 24, 1969, Ser. No. 801,774
Int. Cl. A23j *1/18*
U.S. Cl. 195—4 1 Claim

Covers a method of treating yeast. Paticularly covers a method of treating yeast by breaking down the yeast cell walls to realize a yeast product of increased digestibility and assimilation, and one which contains liberated proteins readily available for human and animal consumption. The yeast cell walls are treated at a relatively high temperature of at least 50° C. with a bacteria of the Bacillus genus or actinomycetes of the Thermoactinomyces genus.

3,681,196

MUCONIC ACID AND DERIVATIVES IN GIBBERELLIC ACID FERMENTATION

Herbert H. Eichhorn, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,137
Int. Cl. C12d *1/00*
U.S. Cl. 195—36 R 5 Claims

A process for producing gibberellic acid which comprises propagating a gibberellic acid producing strain of *Gibberella fujikuroi* under aerobic conditions in an aqueous carbohydrate-containing medium in the presence of muconic acid or its derivatives.

3,681,197

METHOD AND SOLUTION FOR MAINTAINING BIOLOGICAL ACTIVITY IN ENZYMES

Clarence T. Smith, 801 W. 75th St., Kansas City, Mo. 64114

Filed Jan. 2, 1969, Ser. No. 788,597
Int. Cl. A61k *19/00*; C07g *7/02*
U.S. Cl. 195—63 21 Claims

A process and method of solubilizing enzymes in such manner as to retain their biological activity over a long period of time or shelf life and a biologically active solution of enzymes which retains said biological activity over a long period of time and shelf life. A method of solubilizing enzymes whereby to retain their biological activity over long periods of time which utilizes (1) amylopsin and carbonic anhydrase, (2) a carbohydrate suitable as a substrate for the amylopsin and (3) cetyl pyridinium chloride or NH_4Cl. The solution for maintaining amylopsin in biologically active condition (with or without other enzymes added thereto also retained in biological activity over long periods of time) containing, in addition to the amylopsin and other optional enzymes, carbonic anhydrase, NH_4Cl or cetyl pyridinium chloride and a carbohydrate suitable as a substrate for the amylopsin (NH_4Br as an option).

3,681,198

FERMENTATION PROCESS FOR PREPARING (−)(CIS-1,2-EPOXYPROPYL)PHOSPHONIC ACID

Raymond F. White, Englishtown, N.J., and Arnold L. Demain, Wellesley, Mass., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 13, 1970, Ser. No. 37,046
Int. Cl. C12d *9/00*
U.S. Cl. 195—80 10 Claims

Increased yields of the antibiotic (−)(cis-1,2-epoxypropyl)phosphonic acid are obtained by the addition of certain phosphatides to fermentation media. The antibiotic, which is produced by growing newly found strains of Streptomyces on suitable fermentation media, is active against both gram-positive and gram-negative bacteria.

3,681,199

PROCESS OF PRODUCING YEAST OF LOW PLASTICITY AND HIGH SOLIDS CONTENT

Karl Rokitansky, Vienna, Austria, assignor to Patentauswertung Vogelbusch Gesellschaft m.b.H., Vienna, Austria

Continuation-in-part of application Ser. No. 493,530, Oct. 6, 1965. This application Apr. 1, 1970, Ser. No. 21,977
Claims priority, application Austria, Oct. 7, 1964, 8,563/64
Int. Cl. C12c *11/30*
U.S. Cl. 195—98 7 Claims

Yeast of increased dry solid content, reduced plasticity, and high stability is produced by allowing urea or glycerol to act upon a yeast suspension for a short period of time so as to cause effusion of intracellular water from the yeast cells and to yield cytorrhyzed, i.e. shrunken cells. Immediately thereupon the cytorrhyzed yeast is filtered on suction filters, filter presses, centrifuges, or other conventional separating devices. The filtered yeast is allowed to stand to cause re-absorption of extracellular water containing residual urea or glycerol and thus yields yeast of the above mentioned improved properties. Other osmotically active compounds are not suitable for this process and do not cause reduction of the plasticity.

3,681,200

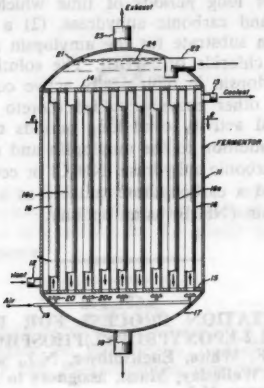
SHELL-AND-TUBE FERMENTOR

John A. Ridgeway, Jr., La Porte, Ind., assignor to Standard Oil Company, Chicago, Ill.

Filed Nov. 9, 1970, Ser. No. 87,820
Int. Cl. C12b *1/16*
U.S. Cl. 195—142 24 Claims

Novel apparatus for aerobic fermentation to produce single-cell microorganisms, such as bacteria and yeasts,

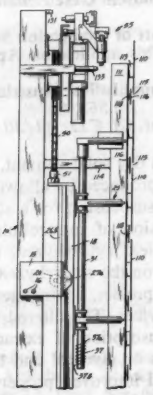
is provided. Shell-and-tube heat exchange techniques are adapted to provide coolant on the shell side and circulating fermentation broth on the tube side to achieve economic temperature control.



3,681,201
LINEAR RECIPROCATING SCRAPING MECHANISMS FOR COKE OVEN JAMBS

Charles D. McCullough, Metropolis, Ill., assignor to Wilputte Corporation, New Providence, N.J.

Filed July 15, 1970, Ser. No. 55,126
Int. Cl. C10b *43/04*
U.S. Cl. 202—241 9 Claims

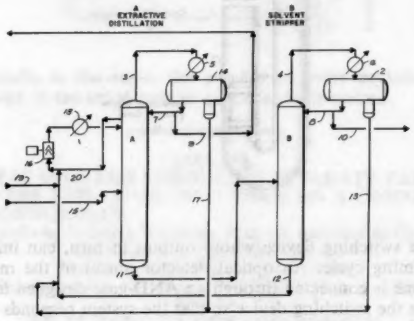


In apparatus for mechanically scraping formed deposits from the jamb of a coke oven, a linear reciprocating movable scraping mechanism for scraping deposits from substantially right angular surfaces of the side walls of a coke oven jamb. The mechanism includes a frame, a pair of carriages cooperatively associated with the frame and extending longitudinally in parallel relationship to each other, and holding means connected to each carriage. At least one scraper unit is connected to each holding means, said scraper units capable of scraping said side walls of the jamb. Means are provided for driving, guiding and maintaining the carriages in opposing reciprocating linear paths, the scrapers on the carriages scraping said deposits in their respective paths.

3,681,202
METHOD OF PURIFYING UNSATURATED HYDROCARBONS BY EXTRACTIVE DISTILLATION WITH SIDE STREAM REMOVAL AND SOLVENT MIX

Terry D. Funkhouser, La Porte, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed June 1, 1970, Ser. No. 41,945
Int. Cl. B01d *3/40;* C07c *7/00*
U.S. Cl. 203—53 8 Claims



Improved control and greater capacity of an extractive distillation tower can be obtained by returning the reflux to the tower withdrawing all or a portion of the external reflux from the tower and premixing of the solvent feed and external reflux prior to introducing the solvent to the tower. By proceeding in this manner better solubilization of the external reflux in the solvent feed is obtained thus increasing the amount of reflux that can be handled by the solvent without flooding. The external premixing also allows adjustment of the solvent feed temperature to compensate for the variations in endothermic heat of solubility from variations in the hydrocarbon composition in the tower.

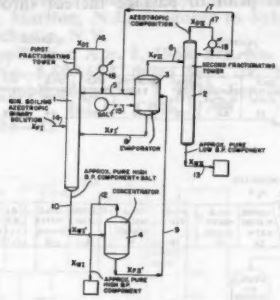
3,681,203
METHOD AND AN APPARATUS FOR SEPARATION OF AZEOTROPIC MIXTURES BY DISTILLATION USING SALT EFFECT

Shuzo Ohe, Yokohama, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan

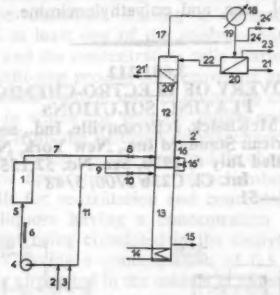
Continuation-in-part of application Ser. No. 718,599, Apr. 3, 1968. This application Feb. 16, 1970, Ser. No. 11,647
Claims priority, application Japan, Apr. 7, 1967, 42/22,176
Int. Cl. B01d *3/34;* C07c *29/26*
U.S. Cl. 203—53 10 Claims

Azeotropic binary solutions are fractionated by means of an evaporator, and in some instances also a concentrator, in conjunction with two fractionating towers. The distillate or the bottom liquid from the first fractionating tower is fed to the evaporator to which is charged a salt which changes the relative volatilities of the solution components. Vapor generated in the evaporator is fed to the second fractionating tower. In the case of a minimum boiling azeotrope, the lower boiling component becomes the bottom liquid of the second fractionating tower and, thus, may be collected and the higher boiling component becomes the bottom liquid of the first fractionating tower or the bottom liquid of the first fractionating tower is a solution of the salt in the higher boiling component from which the higher boiling component may be separated

by means of a concentrator. With a maximum boiling azeotrope, the higher and lower boiling components are collected as the distillates from the first and second fractionating towers, respectively.



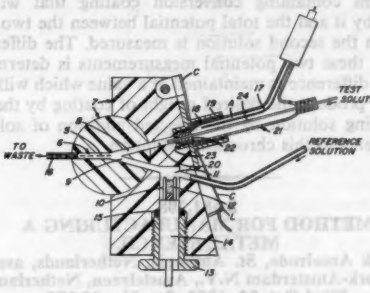
3,681,204
PROCESS FOR CONTINUOUS PURIFICATION OF ESTERS BY PLURAL DISTILLATION AT SPECIFIC PRESSURE RANGES
Jules Mercier, Melle, Deux-Sevres, France, assignor to Melle-Bezons, Melle, Deux-Sevres, France
Filed June 11, 1969, Ser. No. 832,074
Claims priority, application France, June 12, 1968, 487
Int. Cl. B01d *3/36;* C07c *67/06*
U.S. Cl. 203—77 11 Claims



A process for the continuous production of esters in which raw reactor effluent is fed to two distillation zones, one of the zones being an ester separation zone and the other zone being a dehydration zone, wherein the improvement comprises operating the ester separation zone at a pressure in excess of atmospheric pressure and operating the dehydration zone at a pressure which does not exceed atmospheric pressure.

3,681,205
METHOD AND CELL FOR REPETITIVE HIGH PRECISION pH AND LIKE MEASUREMENTS
Alfred N. Ducksbury, Cheltenham, Victoria, and Bruce C. Telford, Glenroy, Victoria, Australia, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed June 29, 1970, Ser. No. 50,498
Claims priority, application Australia, July 10, 1969, 57,760/69
Int. Cl. G01n *27/36*
U.S. Cl. 204—1 T 11 Claims

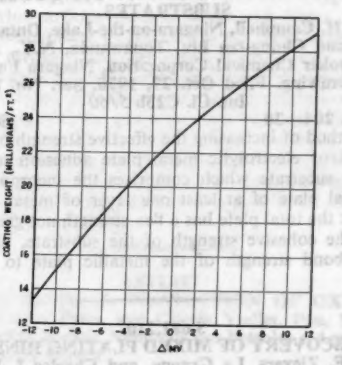
A reference solution of known characteristics and a test solution are passed through separate capillary tubes to the arms of a Y-shaped passage and into the stem of the Y where they flow unmixed with an interface. Electrodes in the two solutions are coupled to a standard pH meter where the pH of the test solution is displayed.



3,681,206
TITRATION ELECTROLYTE AND METHOD
Robert R. Austin, Pasadena, and David M. Creighton, Hacienda Heights, Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
No Drawing. Filed Dec. 4, 1970, Ser. No. 95,383
Int. Cl. G01n *27/42*
U.S. Cl. 204—1 T 5 Claims

A method of measuring the concentration of hydrogen sulfide in natural gas utilizing an electrolyte in a coulometric titrator containing dimethyl sulfoxide to prevent or retard the buildup and adherence of elemental sulfur to the titrator sensing electrode. The buildup prevents accurate or stable titration or reduces the amplitude of the detectable signal. Frequent cleaning of the cell may thus be frequently required for stable operation or a long cell life.

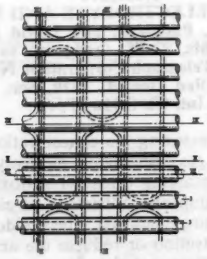
3,681,207
METAL COATING PROCESS
William S. Russell, Warren, Mich., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
Filed Dec. 28, 1970, Ser. No. 101,674
Int. Cl. C23f *7/14;* G01n *27/46*
U.S. Cl. 204—1 T 3 Claims



A method of controlling the weight of chromium-containing conversion coating formed on a metal surface by a fluoride accelerated aqueous chromating bath wherein a first fluoride accelerated aqueous chromating solution is contacted with a reference electrode and a fluoride sensitive electrode of the potentiometric type and the total

potential between these electrodes in the solution is measured. These electrodes are then used to contact a second fluoride accelerated aqueous chromating solution, the composition of which is known, as well as the weight of chromium containing conversion coating that will be formed by it and the total potential between the two electrodes in the second solution is measured. The difference between these two potential measurements is determined and this difference is maintained at a value which will consistently produce the desired weight of coating by the first chromating solution by the selected addition of solution components to this chromating solution.

3,681,208
METHOD FOR MANUFACTURING A METAL STENCIL
Lodweijk Anselrode, St. Anthonis, Netherlands, assignor to Stork-Amsterdam N.V., Amstelveen, Netherlands
Filed Oct. 23, 1970, Ser. No. 83,377
Claims priority, application Netherlands, Oct. 31, 1969, 6916484
Int. Cl. B41c *1/14*; C23b *7/00*
U.S. Cl. 204—11 **4 Claims**



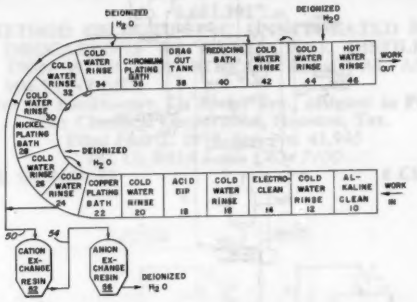
Method for manufacturing a metal stencil by starting from a cylindrical metal matrix having on its surface a pattern of insulating material; a thin metal wire is tightly wound upon said matrix, after which a layer of metal is deposited upon the matrix, whereupon this layer is removed from the matrix.

3,681,209
METAL PLATING ON NONCONDUCTIVE SUBSTRATES
Donald H. Campbell, Niagara-on-the-Lake, Ontario, Canada, and Chong-tan Liu, Tonawanda, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Filed Oct. 27, 1970, Ser. No. 84,463
Int. Cl. C23b *5/60*
U.S. Cl. 204—30 **64 Claims**

A method of increasing the effective strength of electroless and/or electrolytic metal plate adhesion to a nonmetallic substrate which comprises the incorporation in the metal plate of at least one layer of metal so modified that the total plate has a flex strength not greater than either the cohesive strength of the substrate, or the adherent bond strength of the metallic plate to the substrate.

3,681,210
RECOVERY OF MIXED PLATING RINSES
James F. Zievers, La Grange, and Charles J. Novotny, Hickory Hills, Ill., assignors to Industrial Filter & Pump Mfg. Co., Cicero, Ill.
Filed Apr. 8, 1971, Ser. No. 132,416
Int. Cl. B01j *1/04*; C02b *1/42, 1/60*
U.S. Cl. 204—35 R **10 Claims**

A method and system for treating mixed rinse waters used to rinse workpieces removed from chromium and other metal treating baths provides for reducing hexavalent chromium ions carried by the workpieces prior to rinsing and mixing the rinse waters from a plurality of different rinses prior to passage thereof through cation

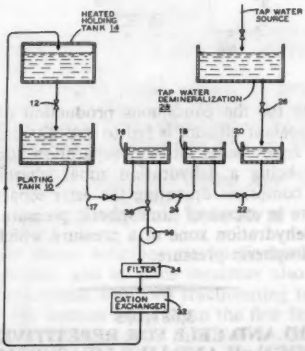


and anion exchangers. The method and system also provide for the immediate removal of CN from the anion regenerant while it has a high pH value and then combining the cation and anion regenerants prior to neutralization.

3,681,211
ELECTROPLATING A BLACK NICKEL-ZINC ALLOY DEPOSIT
Walter Schwartz and William H. Berkowitz, New York, and Bernard E. Esquenet, Ridgewood, N.Y., assignors to The Enequist Chemical Co., Inc., Brooklyn, N.Y.
No Drawing. Filed Nov. 23, 1970, Ser. No. 92,215
Int. Cl. C23b *5/32*
U.S. Cl. 204—43 **7 Claims**

Black electroplates are obtained from an alkaline solution of nickel, zinc, and polyethyleneimine.

3,681,212
RECOVERY OF ELECTRO-CHEMICAL PLATING SOLUTIONS
Dale Clay McKissick, Jeffersonville, Ind., assignor to American Standard Inc., New York, N.Y.
Filed July 6, 1970, Ser. No. 52,155
Int. Cl. C23b *5/06, 5/48*
U.S. Cl. 204—51 **5 Claims**



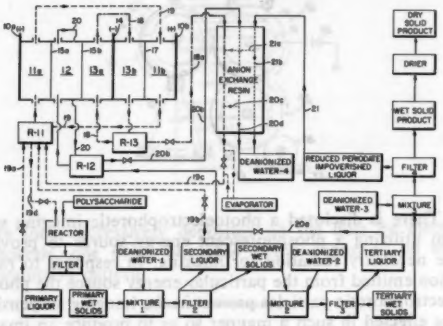
A process for economically recovering electroplating solutions, which are usually discarded, from an electroplating production line. The process provides for one or more static rinses where the plated material is washed free of the plating solution. The rinse solution is then filtered and treated in a cation exchanger where impurities are removed from the rinse and the purified solution returned to the plating tank for immediate use or to a holding tank for future use.

3,681,213

PER(HALO-OXYGEN) ACID OXIDATION, PURIFICATION AND RECOVERY PROCESS

Allyn Harold Heit, Mount Holly, and James Norris Williamson, Marlton, N.J., assignors to Sybron Corporation, Rochester, N.Y.

Original application Apr. 8, 1968, Ser. No. 719,361, now Patent No. 3,607,694, dated Sept. 21, 1971. Divided and this application Oct. 7, 1970, Ser. No. 78,986
Int. Cl. C01b *11/26*
U.S. Cl. 204—82 6 Claims



An electrodialytic apparatus utilizing anion and cation permselective membranes and having at least one two-chamber cell for purification and at least one three-chamber cell proximal the two-chamber unit for concentration of aqueous per(halo-oxygen) acids and their salts, all anolyte chambers sharing a common anolyte stream, all catholyte chambers sharing a common catholyte stream, and at least one of the anolyte chambers of the purification and the concentration cells sharing a common anode. A multi-step process for recovering and regenerating the periodate oxidant used in preparing oxidized polysaccharides in which the primary liquor and subsequent wash liquors from the oxidized polysaccharide filter cake are circulated in the anolyte and middle chambers of the electrodialytic apparatus having two-chamber and three-chamber cells for re-oxidation and concentration respectively, the liquors having a concentration of 1 to 15 weight percent being circulated in the anolyte chambers; those liquors having a concentration of 0.5 to 5 weight percent being circulated in the middle chamber, all liquors and effluents having a concentration of less than 0.5 weight percent being passed through a strong base anion exchange resin which removes the remaining periodate or chemically reduced periodates, which are subsequently eluted by the sodium hydroxide catholyte, which in turn is circulated in the anolyte chambers of the apparatus for regeneration.

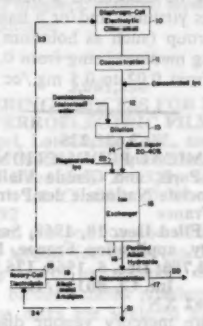
3,681,214

PROCESS FOR PRODUCING HIGH-PURITY ALKALI HYDROXIDES

Teodor D. Ionescu, Bucharest, and Gheorghe F. Uta and Aurel D. Teodoru, Gheorghe Gheorghiu Dej, Rumania, assignors to Grupul Industrial de Petrochimie, Judetul-Bacau, Rumania

Filed Jan. 11, 1971, Ser. No. 105,311
Int. Cl. C01b *13/14;* C01d *1/28*
U.S. Cl. 204—96 9 Claims

A process for producing high-purity alkali hydroxides, e.g. sodium hydroxide or potassium hydroxide in which an impure fluid is drawn from a diaphragm-cell electrolysis plant and a concentration above 40% generally 50% or higher, is diluted with deionized water to a concentration of 20% to 40% alkali hydroxide, the resulting solution being subjected to ion exchange with a highly basic anion-exchange resin whereupon the decontaminated



solution is treated with an amalgam of the same alkali metal. The amalgam is preferably drawn from a mercury-cell electrolysis process.

3,681,215

MANUFACTURE OF ACRYLAMIDE-BASED POLYMERS IN LIQUID AMMONIA

Marvin L. Peterson, Woodstown, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 28, 1970, Ser. No. 41,541
Int. Cl. C08f *1/18, 1/20*
U.S. Cl. 204—159.23 22 Claims

Water-soluble polymers containing at least about 50 mol percent of acrylamide moieties are made by irradiating a liquid ammonia solution of vinyl monomer containing acrylamide and an organic acyclic azo compound.

3,681,216

CROSSLINKED NYLON BY IRRADIATION OF A GRAFT COPOLYMER OF NYLON WITH AN ETHYLENE/ACRYLATE OR MODIFIED COPOLYMER

Francis R. Galiano, Prairie Village, and Samuel P. Thackaberry, Wayne E. Smith, and Raymond P. Anderson, Overland Park, Kans., assignors to Custom Resins, Inc., Henderson, Ky.

Filed June 13, 1969, Ser. No. 832,910
Int. Cl. B01j *1/00;* C08d *1/00*
U.S. Cl. 204—159.14 11 Claims

The nylon articles such as films and fibers, are effectively cross-linked by irradiation to obtain dimensional stability, memory and resistance to heat and solvents without significant polymer degradation by employing a graft of a nylon polymer grown on an ethylene-acrylate copolymer as initiator and restricting the dose of ionizing radiation to a low dose of about 5 to 20 megarads. Higher doses give a highly cross-linked polymer with significantly lower degradation than with nylon homopolymers. The preferred ethylene copolymer has a portion of the acrylate converted to amide.

3,681,217

PHOTO-CHEMICAL PRODUCTION OF OXIMES

Georges Lucas, Paris, and Claude Viallet, Pau, France, assignors to Societe Nationale des Petroles d'Aquitaine, Courbevoie, France

No Drawing. Filed Dec. 18, 1968, Ser. No. 784,895
Claims priority, application France, Dec. 20, 1967, 133,142
Int. Cl. B01j *1/10*
U.S. Cl. 204—162 XN 8 Claims

A high-pressure mercury vapour discharge lamp for carrying out photo-chemical reactions comprises an envelope defining an enclosed space, the enclosed space

having therein a doping medium comprising at least one halide of a metal of Group 6 (such as chromium), with which there may be associated a halide of a metal of Group 3 (such as yttrium) and/or a halide of a metal of the lanthanide group (such as holmium), the concentration of the doping medium being from 0.002 to 1 mg./cc. and preferably from 0.02 to 0.5 mg./cc.

3,681,218

PHOTO-CHEMICAL PRODUCTION OF OXIMES

Georges Lucas, Paris, and Claude Viallet, Pau, France, assignors to Societe Nationale des Petroles d'Aquitaine, Courbevoie, France

No Drawing. Filed Dec. 18, 1968, Ser. No. 784,896
Claims priority, application France, Dec. 18, 1967, 132,758; Dec. 5, 1968, 176,718
Int. Cl. B01j *1/10*
U.S. Cl. 204—162 XN **8 Claims**

A high-pressure mercury vapour discharge lamp for carrying out photo-chemical reactions comprises an envelope defining an enclosed space, the enclosed space having therein a doping medium comprising at least one halide of a metal of Group 3*a* (such as yttrium), with which there may be associated a halide of a metal of Group 3*b* (such as thallium) and/or a halide of a metal of the lanthanide group (such as holmium), the concentration of the doping medium being from 0.002 to 1 mg./cc. and preferably from 0.02 to 0.5 mg./cc.

3,681,219

ADDUCTS OF DIALKYL DITHIOPHOSPHORIC ACID

Alexis A. Oswald, Mountainside, N.J., assignor to Esso Research and Engineering

No Drawing. Original application Jan. 3, 1966, Ser. No. 518,028. Divided and this application Aug. 1, 1968, Ser. No. 763,997
Int. Cl. B01j *1/10*
U.S. Cl. 204—162 **4 Claims**

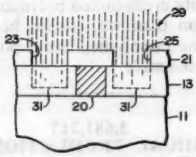
A method for the preparation of S-propenyl dialkylthiophosphates employing ultraviolet or gamma radiation as a free radical initiator. A dihydrocarbyldithiophosphoric acid is reacted with methyl acetylene in liquid phase to produce the phosphates, which may undergo a further free radical type reaction with an organic thiol compound.

3,681,220

METHOD OF MAKING A FIELD EFFECT TRANSISTOR

George Chizinsky Beverly Farms, Mass., assignor to KEV Electronics Corporation, Wilmington, Mass.

Filed Apr. 3, 1969, Ser. No. 813,148
Int. Cl. B01k *1/00*
U.S. Cl. 204—164 **5 Claims**



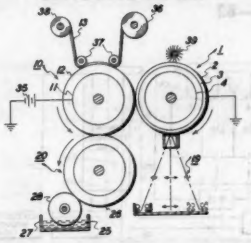
In the method described herein, the gate and channel of a field-effect transistor are created in separated portions of a layer of high resistivity semiconductor material by ion implantation using high energy ion beams. The use of such an implantation technique permits the implanted regions to be very sharply defined so that the gate and channel regions are separated by a high resistivity barrier which is of substantially uniform thickness.

3,681,221

PHOTOELECTROPHORETIC IMAGING BY PHOSPHORESCENCE

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Apr. 27, 1970, Ser. No. 32,238
Int. Cl. G03g *13/22*
U.S. Cl. 204—181 **4 Claims**



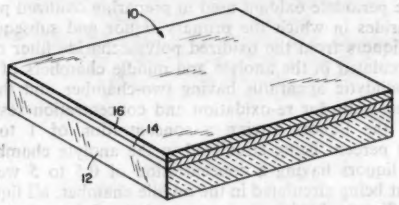
There is disclosed a photoelectrophoretic imaging system utilizing a phosphorescent energy source to provide the necessary radiation for imaging. In response to radiation emitted from the particular energy source the photoelectrophoretic particles present in the imaging suspension are effected in such a manner so as to produce an image.

3,681,222

METHOD OF PRODUCING LUMINESCENT SCREENS BY THE ELECTROPHORETIC PROCESS

James A. Gupton, Jr., Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.

Filed May 18, 1970, Ser. No. 38,296
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 **26 Claims**



A method of producing luminescent surfaces such as those used in cathode ray tubes and fluorescent lights in which the luminescent material is electrophoretically deposited over a thin film of metallic aluminum which has been applied to one surface of a transparent substrate. The opaque metallic aluminum film is then converted into transparent aluminum oxide which bonds the luminescent material to the transparent substrate.

3,681,223

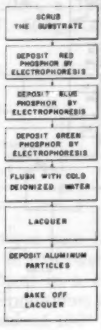
ELECTROPHORETIC DEPOSITION OF COLOR PHOSPHORS

James A. Gupton, Jr., Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.

Filed July 27, 1970, Ser. No. 58,547
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 **9 Claims**

Color phosphors are electrophoretically deposited on a cathode ray tube faceplate. First, a plurality of conductive dot patterns are deposited on the faceplate, one pattern for each color of phosphor dots to be deposited. Each pattern includes lands of material on which the dots

are to be deposited and conductive paths interconnecting the lands. The conductive pattern is deposited with a single masking operation. The different color phosphors

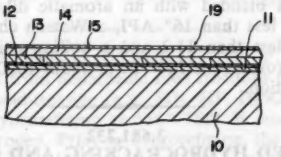


are then successively deposited on the dots by electrophoresis, one color phosphor being deposited on each conductive pattern.

3,681,224
ELECTROPHORETIC COATING METHOD
Sanford E. Stromberg, Tonawanda, N.Y., assignor to Textron, Inc.
No Drawing. Filed May 8, 1970, Ser. No. 35,913
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—181 **17 Claims**

A method for electrophoretically coating a solid substrate which comprises forming a coating on said substrate comprising a carbonyloxy-group containing film-forming, polymeric material and a melamine crosslinking agent by electrodeposition from an aqueous dispersion (including both solution and suspensions) using an acid treatment, preferably a post-deposition treatment, to effect reduced curing schedules. The disclosed method allows curing schedules at reduced curing conditions of time and temperature.

3,681,225
METHOD OF MAKING A MAGNETIC DISC
Susumu Genma, Tokyo, and Akio Kuroda, Toshio Kato, and Fusao Kishi, Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan
Filed Nov. 23, 1970, Ser. No. 91,747
Claims priority, application Japan, Nov. 26, 1969, 44/94,243
Int. Cl. H01f *10/06*
U.S. Cl. 204—30 **3 Claims**

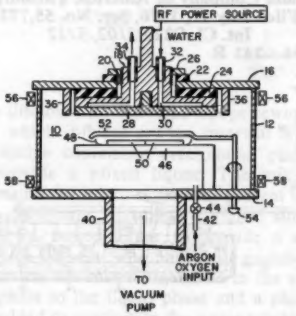


A method of making a magnetic disc wherein an electrically conducting material layer is formed on the surfaces of a base plate made by shaping a synthetic resinous material, then a magnetic material is applied to the coat by electrodeposition, and finally the surfaces are polished by a polishing material of very small grain size. The layer of magnetic material formed by electrodeposition has its surfaces rendered smooth by the polishing operation because minute fissures in the surfaces are removed and at the same time the magnetic material layer itself is annealed by the heat of friction.

3,681,226
SPUTTERING PROCESS FOR MAKING FERROELECTRIC FILMS
Siegfried F. Vogel, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
No Drawing. Filed July 2, 1970, Ser. No. 52,135
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **13 Claims**

The fabrication, composition and utilization of sputtering cathodes or targets for mixed oxide or ferroelectric films comprising two or more metals. Such cathodes are made from the blended metal powders by compression into disks. These disks are soldered against a metallic, water-cooled backing plate. Sputtering with DC or RF power takes place in a reactive, specifically an oxidizing, atmosphere.

3,681,227
MICROCIRCUIT MASK AND METHOD
Raymond E. Szupillo, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed June 29, 1970, Ser. No. 50,670
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **11 Claims**

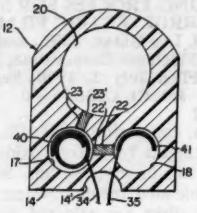


A method of making thin films of alpha Fe_2O_3 by a reactive sputtering technique, the parameters of which are controlled within specified ranges so that the resultant film has greater optical and physical density, greater scratch and abrasion resistance and higher refractive index than films produced by other deposition techniques or by conventional reactive sputtering. The improved iron oxide film having a thickness in the range of 500 A. to 5000 A. may be deposited on a transparent glass substrate and thereafter be patterned to form a microcircuit mask having improved properties.

3,681,228
ELECTROCHEMICAL CONCENTRATION CELL FOR GAS ANALYSIS
Walter D. Komhyr, 70 Manhattan Drive, Boulder, Colo. 80302
Filed Feb. 6, 1969, Ser. No. 797,189
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 R **10 Claims**

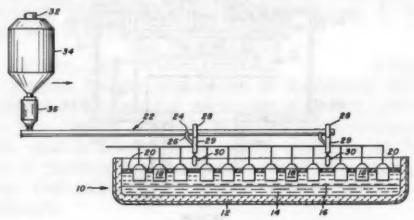
An electrochemical concentration cell for gas analysis is made up of an integral cell body composed of an inert material and which is provided with openings defining separate anode and cathode chambers, the chambers being linked together by an ion bridge disposed in an opening

formed between the chambers, and a larger opening defining a reservoir chamber communicates with the cathode chamber to automatically maintain a predetermined level of solution electrolyte in the cathode chamber for portable cell applications. In non-portable cell applications, a separate pumping system may be utilized in place of the reservoir chamber to maintain a predetermined solution



level over a long time period. In sampling air for the presence of selected trace atmospheric constituents, the anode and cathode are defined by platinum electrodes immersed in potassium iodide solutions of different concentrations in each of the chambers, and a slotted air exhaust tube in the cathode chamber minimizes loss of the solution electrolyte in atmospheric testing.

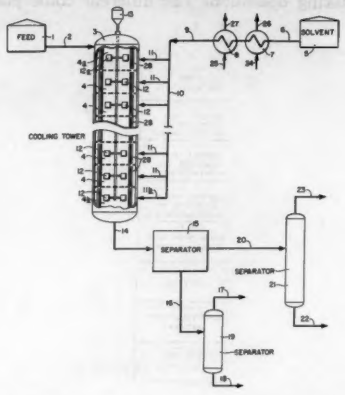
3,681,229
ALUMINA FEEDER
Richard L. Lowe, Glenshaw, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed July 17, 1970, Ser. No. 55,773
Int. Cl. C22d *3/02, 3/12*
U.S. Cl. 204—243 R **9 Claims**



Apparatus for feeding alumina to an aluminum-producing electrolytic cell including a fluidization type conveyor communicating with a supply of alumina and having feed orifices in its side wall for feeding alumina into the electrolytic cell adjacent vertically reciprocal plungers which break the crust on the surface of the cell. The fluidization conveyor has a porous hose in it for introducing air into the alumina to fluidize the alumina so that it will flow through the conveyor. Metering apparatus with fluidizing valves therein is also provided between the alumina supply and the conveyor for supplying measured quantities of alumina into the conveyor for feeding the cell.

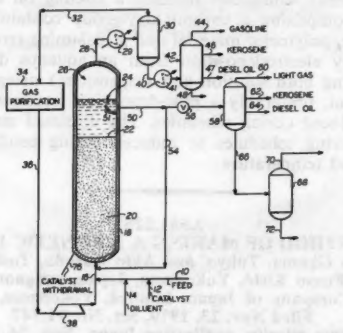
3,681,230
IMMISCIBLE FILTRATION OF DILUTION CHILLED WAXY OILS
John F. Eagen, Sarnia, Ontario, Canada, and John F. Richards, Baton Rouge, La., assignors to Esso Research and Engineering Company
Filed July 10, 1970, Ser. No. 53,806
Int. Cl. C10g *43/08*
U.S. Cl. 208—33 **14 Claims**

In the dewaxing of high viscosity lube oils by direct chilling of the oil with a solvent in a plurality of intensely agitated stages, the solvent composition is so chosen that the oil is miscible with the solvent during most of the cooling but becomes immiscible near the separation tem-



perature so that filtration occurs under immiscible conditions with improved yields and filter rate.

3,681,231
HIGHER CONVERSION HYDROGENATION
Seymour B. Alpert, Princeton, Ronald H. Wolk, Trenton, and Michael C. Chervenak, Pennington, N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.
Continuation of abandoned application Ser. No. 808,510, Mar. 19, 1969. This application Feb. 10, 1971, Ser. No. 114,343
Int. Cl. C10g *9/16, 13/02, 37/04;* **C23f** *14/00*
U.S. Cl. 208—59 **5 Claims**

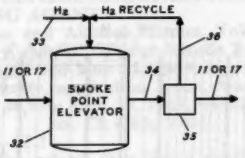


A process for the hydrogenation of a petroleum residuum feed material containing at least 25 volume percent material boiling above 975° F. and greater than 5 weight percent asphaltenes by reacting the feed with a hydrogen rich gas at elevated temperatures and pressures in an ebullated catalytic bed reactor wherein said feed material is blended with an aromatic diluent having a gravity of less than 16° API, a Watson characterization factor of less than 11.2 and a boiling point within the range of from about 700° F. to about 1000° F., prior to hydrogenation.

3,681,232
COMBINED HYDROCRACKING AND CATALYTIC DEWAXING PROCESS
Clark J. Egan, Piedmont, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Nov. 27, 1970, Ser. No. 93,303
Int. Cl. C10g *13/02, 23/00*
U.S. Cl. 208—80 **12 Claims**

A process for producing jet fuel from a hydrocarbon feedstock boiling substantially below about 1000° F.

comprising separating the feedstock into a first 500° F.–600° F. fraction and a 600° F.–1000° F. fraction; contacting the 600°–1000° F. fraction with hydrogen and a hydrocracking catalyst in a hydrocracking zone at hydrocracking conditions; separating the hydrocrackate into a 100° F.–300° F. fraction, a 300° F.–500° F. fraction, and a second 500° F.–600° F. fraction; contacting the



500° F.–600° F. fractions with hydrogen and a catalyst comprising mordenite in hydrogen form and at least one hydrogenating component in a catalytic dewaxing zone at catalytic dewaxing conditions; and separating the catalytic dewaxate into a second 100° F.–300° F. fraction and a 300° F.–600° F. jet fuel. The hydrocarbon feedstock is preferably a hydrofined hydrocarbon feedstock.

3,681,233

MAKING A CABLE OIL BY ACID EXTRACTION AND HYDROFINING

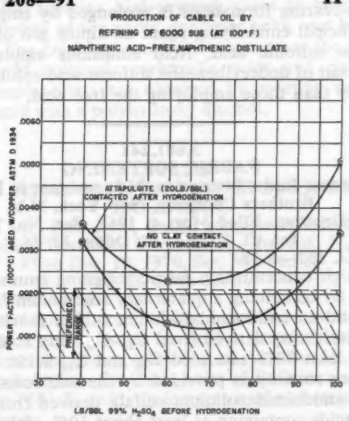
Ivor W. Mills, Media, and Glenn R. Dimeler, West Chester, Pa., assignors to Sun Oil Company, Philadelphia, Pa.

Continuation-in-part of applications Ser. No. 622,398, Mar. 13, 1967, now Patent No. 3,462,358, Ser. No. 652,026, July 10, 1967, now Patent No. 3,502,567, Ser. No. 730,999, May 22, 1968, Ser. No. 850,716 and Ser. No. 850,717, both Aug. 18, 1969, and Ser. No. 873,008, Oct. 31, 1969. This application Mar. 24, 1970, Ser. No. 22,295

The portion of the term of the patent subsequent to Mar. 24, 1987, has been disclaimed

Int. Cl. C10g *17/00*

U.S. Cl. 208—91 **11 Claims**



Low ADF, 2000–12,000 SUS (at 100° F.) cable oils are prepared from naphthenic lube fractions by a process comprising acid-treating (e.g., SO_3, HF, H_2SO_4), neutralizing, and hydrorefining at 550°–750° F. and 800–3000 p.s.i. of hydrogen. Prior to hydrorefining, the neutralized oil can be contacted with an adsorbent comprising bauxite or a naturally-occurring fuller's earth bleaching clay, such as attapulgite, as a precaution to insure that the hydrorefining catalyst will not be poisoned by trace impurities. The naphthenic lube fraction is preferably substantially free from naphthenic acids and can be a raffinate from extracting of a distillate with an aromatic selective solvent (e.g. furfural, phenol, etc.).

3,681,234

PRODUCTION OF AROMATICS FROM OLEFINIC HYDROCARBONS

Edward A. Fraini and Milton S. Wing, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 12, 1971, Ser. No. 115,104

Int. Cl. C10g *35/08*

U.S. Cl. 208—141 **6 Claims**

A mixture of olefinic hydrocarbons having 3–5 carbons is reformed into a mixture of aromatic hydrocarbons having 6–10 carbon by contacting the olefinic mixture with a platinum catalyst in the presence of excess hydrogen. The contact temperature ranges from 550° C. to 625° C. with a pressure range from 450–550 p.s.i.g. The catalyst comprises 0.3 to 0.9 weight percent platinum on an alumina or silica support.

3,681,235

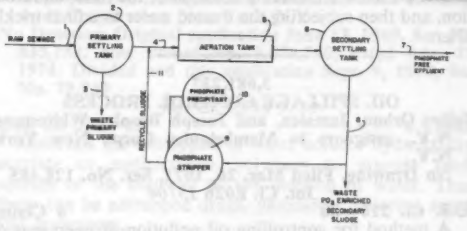
INTERNAL PRECIPITATION OF PHOSPHATE FROM ACTIVATED SLUDGE

George J. Topol, Silver Spring, Md., assignor to Biospherics Incorporated, Rockville, Md.

Filed Mar. 11, 1971, Ser. No. 123,309

Int. Cl. C02c *1/06*

U.S. Cl. 210—6 **4 Claims**



There is disclosed an activated sludge sewage treatment process in which influent sewage material is mixed with activated sludge containing precipitated phosphate particles to provide a mixed liquor. The mixed liquor is aerated to cause the micro-organisms present in the sludge to take up phosphate. Phosphate-enriched sludge is separated from the mixed liquor to provide a substantially phosphate-free effluent. The phosphate-enriched sludge is treated to cause the micro-organisms in the sludge to release phosphate to the liquid phase and a phosphate precipitant is added to precipitate the water soluble phosphate content. The sludge containing the precipitated phosphate particles is recycled for mixing with influent sewage material.

3,681,236

SEWAGE TREATMENT PLANT AND METHOD OF TREATING SEWAGE

Joseph L. Bergles, Rte. 2, Box 385, 3901 Three Mile Road, Franksville, Wis. 53126, and Marvin A. Nelson, Rte. 1, Box 169, Union Grove, Wis. 53182

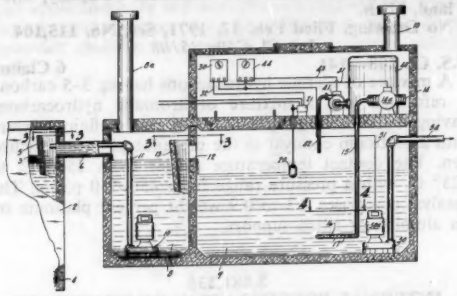
Continuation-in-part of application Ser. No. 29,342, Mar. 31, 1970. This application Feb. 25, 1971, Ser. No. 118,754

Int. Cl. C02c *1/12*

U.S. Cl. 210—16 **9 Claims**

A sewage treatment plant including a primary tank in which the majority of the sludge is settled from the sewage and in which an anaerobic biological action occurs, a second tank for receiving effluent from the first tank and in which second tank clarification occurs by settling of the remaining sludge; and a third tank in which an aerobic biological process occurs. This aerobic action is enhanced by an aeration process which is provided by an air supplying pump. The sewage plant also includes means for chlorinating the fluid in the third tank after it has been subjected to the aerobic action. Means are also provided for timing the action of the aeration pump, the chlorina-

tion pump, and the pump which removes the fluid from the second tank and discharges it to the final filter bed. The final filter bed is of a trickle filter type.



A non-continuous flow method of treating sewage including steps of subjecting raw sewage to anaerobic action to separate the majority of the sludge from the water, subjecting the resulting effluent to a clarification process while in a quiescent state, subjecting the clarified fluid to aerobic action, including aeration of the fluid, chlorination, and then subjecting the treated water to a final trickle filter.

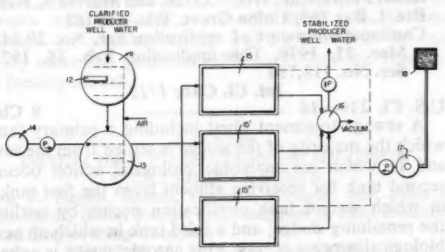
3,681,237
OIL SPILLAGE CONTROL PROCESS
Julius Orban, Jamaica, and Joseph Brooks, Whitestone, N.Y., assignors to Membrionics Corp., New York, N.Y.
No Drawing. Filed Mar. 26, 1971, Ser. No. 128,485
Int. Cl. E02b *15/04*
U.S. Cl. 210—30 **4 Claims**

A method for controlling oil pollution of open seas or calm waters is provided wherein a stable open cell resilient foam material specially treated with a hydrophobic-oleophilic composition to enhance its oil sorbability and water repellency is employed to remove oil from oil-contaminated waters.

ERRATA

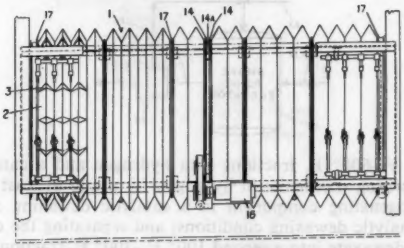
For Classes 210—46 and 210—47 see:
Patent Nos. 3,680,698 and 3,681,283

3,681,238
METHOD FOR STABILIZING PRODUCER WELL WATER
Robert C. Emmett, Jr., Dundee, Ill., assignor to Envirotech Corporation, Salt Lake City, Utah
Filed Jan. 11, 1971, Ser. No. 105,492
Int. Cl. C02b *1/28*
U.S. Cl. 210—50 **7 Claims**



Producer well water intended for use in the secondary recovery of oil by water flooding is stabilized by aeration, treatment with a coagulant and filtration through a precoated vacuum filter.

3,681,239
DRUM FILTERS
Denis Angelinetta, London, England, assignor to Glenfield & Kennedy Limited, Kilmarnock, Ayrshire, Scotland
Filed Dec. 17, 1969, Ser. No. 885,800
Claims priority, application Great Britain, Dec. 17, 1968, 59,827/68
Int. Cl. B01d *33/06*
U.S. Cl. 210—402 **4 Claims**



A drum filter includes a filtering drum the peripheral surface of which presents at least one circumferential channel. The sides of the channel are straight and outwardly divergent and the channel is preferably of helical form. The filter further comprises a skeleton frame including a support ring assembly having a plurality of panel supports mounted around the periphery thereof and a plurality of filtering panels of fluid permeable material individually removably mounted on the panel supports.

3,681,240
RETARDED ACID EMULSION
Clarence R. Fast, Frederick H. Rixe, and Ernest L. Duffield, Jr., Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.
No Drawing. Filed Dec. 10, 1970, Ser. No. 97,005
Int. Cl. E21b *43/27*
U.S. Cl. 252—8.55 C **8 Claims**

The action of acid emulsions for use in acidizing hydrocarbon-bearing formations is prolonged by employing as the principal emulsifying agent an amine salt of dodecylbenzene sulfonic acid. Acid emulsions employing the amine salt of dodecylbenzene sulfonic acid exhibit greater stability than those employing the free acid.

3,681,241
FABRIC SOFTENING
Jerome Rudy, Livingston, N.J., assignor to Lever Brothers Company, New York, N.Y.
No Drawing. Filed Mar. 4, 1968, Ser. No. 709,879
Int. Cl. C11d *3/26*; D06m *13/46*
U.S. Cl. 252—8.75 **4 Claims**

A high concentration fabric softening emulsion is obtained by combining a quaternary ammonium fabric softener and an amidoimidazolinium sulfate fabric softener, the latter being derived from C_{14}–C_{18} fatty acids containing at least 80% saturated C_{16} and C_{18} acids. Low temperature stability is provided by the additional presence of an amidoimidazolinium sulfate derived from C_{14}–C_{18} fatty acids containing at least about 10% oleic acid.

3,681,242
TWO-STAGE PREPARATION OF HIGH DROPPING POINT LITHIUM SOAP GREASE
Syed S. H. Gilani, Donald W. Murray, and Juan M. Salva, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company
No Drawing. Filed Jan. 28, 1971, Ser. No. 110,596
Int. Cl. C10m *5/14*
U.S. Cl. 252—41 **4 Claims**

A high temperature multipurpose grease is prepared from the lithium soap of a C_{12} to C_{24} hydroxy fatty acid, e.g. 12-hydroxy stearic acid, and a dilithium soap of a

C_4 to C_{12} dicarboxylic acid, e.g. dilithium azelate. A rigorous control of processing conditions, including two stages of heating, results in a good yield of grease of high dropping point.

3,681,243
LIQUID DEVELOPER FOR ELECTROPHOTOGRAPHY CONTAINING STAIN TEXTURE PREVENTING AGENT

Zenjiro Okuno and Akinori Mizuno, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

No Drawing. Filed May 22, 1969, Ser. No. 827,049
Claims priority, application Japan, May 30, 1968, 43/36,976; Mar. 25, 1969, 44/22,091
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 **3 Claims**

The invention relates to a liquid developer for electrophotography, comprising a carrier liquid and a toner dispersed in said carrier liquid, wherein said developer contains at least one compound selected from the group consisting of metal-dialkyl-dithiophosphates, sodium-alkyl-phosphates, alkyl-phosphates, alkali metal-alkyl-sulfates, alcohols, monocarboxylic acids, phthalic acid, alkyl phthalates, ammonia, amines, aldehydes, dekalin, azobenzene, camphor, citral and styrene.

3,681,244
FINISHING COMPOSITION FOR MULTI-FILAMENT YARNS

James Edgar Obetz, Newark, N.J., and Kimon Constantine Dardoufas, Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 607,381, Jan. 5, 1967. This application Aug. 19, 1970, Ser. No. 65,331
Int. Cl. D06m *13/34, 13/20, 13/18*
U.S. Cl. 252—8.8 **11 Claims**

This invention relates to a finishing composition and more specifically to a composition capable of imparting excellent translational efficiency to high-strength multi-filament yarns. The compositions are particularly suitable for finishing high-strength yarns to be used for the production of tire yarns, conveyor belts, seat belts and the like. The finishing composition comprises the reaction products of polybasic carboxylic acids and polyesters. These simple esters are obtained by reacting monocarboxylic acid with a polyhydroxy alcohol.

3,681,245
EuO FILMS WITH ENHANCED MAGNETIC EXCHANGE

Kenneth Lee, Palo Alto, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,823
Int. Cl. C04b *35/50*
U.S. Cl. 252—62.55 **4 Claims**

A ferromagnetic composition consisting essentially of EuO doped with excess Eu and a monovalent metal chosen from the group consisting of Ag, Cu, Au, Na, K, In. By such doping, the Curie point of EuO is raised from 77° K. to 150° K., with an increase in the electrical resistivity as well.

3,681,246
MEDIUM FOR CONSOLIDATING DUST IN COAL-MINES

Hans Lewer, Witten-Annen, Hanspeter Dust, Cologne, Deutz, and Martin Thonnes, Bergisch Gladbach, Germany, assignors to Chemische Fabrik Kalk G.m.b.H.

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,505
Claims priority, application Germany, Jan. 20, 1970, P 20 02 364.7
Int. Cl. C09k *3/22*
U.S. Cl. 252—88 **10 Claims**

A medium for consolidating dust in coal-mines and preparation of said medium, comprising calcium chloride, magnesium chloride or mixtures thereof intimately mixed with sodium chloride.

3,681,247
LUBRICANT COMPOSITION

Robert Earl Wann, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of application Ser. No. 800,006, Feb. 17, 1969. This application Jan. 11, 1971, Ser. No. 105,603
Int. Cl. C10m *1/26, 1/34*
U.S. Cl. 252—51.5 A **6 Claims**

Lubricant compositions comprising fatty acid diesters of tripropylene glycol wherein each fatty acid moiety contains from about 6 to about 10 carbon atoms and, as an antioxidant from about 0.001% to about 5% of a mixture of p,p'-dioctyldiphenylamine and N-phenyl-1,2,3,4-tetrahydro-2-naphthylamine.

3,681,248
WATER SOLUBLE ENTRAPPING OF A FRAGRANCE

Francis E. Gould, Princeton, and Thomas H. Shepherd, Hopewell, N.J., assignors to National Patent Development Corporation, New York, N.Y.

No Drawing. Original application June 13, 1969, Ser. No. 833,182, now Patent No. 3,576,760, dated Apr. 27, 1971. Divided and this application Sept. 9, 1970, Ser. No. 70,939
Int. Cl. C11d *3/50*
U.S. Cl. 252—89 **6 Claims**

Materials are entrapped in water soluble hydroxyalkyl acrylate or methacrylate polymers to provide ready sources of the material by the deletion of water. Thus, there can be entrapped drugs, pesticides, flavoring agents and fragrances.

3,681,249
UNSYMMETRICAL DIPHENYL CARBONATES

Walter Traber, Riehen, and Anton G. Weiss, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application July 26, 1968, Ser. No. 747,795, now Patent No. 3,634,484. Divided and this application Jan. 14, 1971, Ser. No. 106,533
Int. Cl. C11d *3/48*
U.S. Cl. 252—106 **5 Claims**

Bactericidal detergent compositions containing as antibacterial agents, unsymmetrical diphenyl carbonates which contain as one alcohol moiety a phenoxyphenyl radical which is unsubstituted or substituted by halogen and/or lower alkyl or trifluoromethyl, and as a second alcohol moiety a phenyl radical which is unsubstituted or bears certain substituents.

3,681,250
PAINT STRIPPING COMPOSITION AND METHOD

Donald P. Murphy, Royal Oak, Mich., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 686,718, Nov. 29, 1967. This application Sept. 14, 1970, Ser. No. 72,158
The portion of the term of the patent subsequent to Jan. 5, 1988, has been disclaimed
Int. Cl. C11d *7/06*
U.S. Cl. 252—158 **9 Claims**

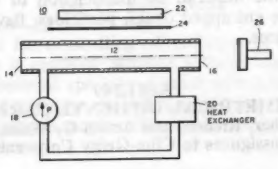
An alkaline paint stripping composition comprising one or more alkaline materials such as alkali metal hydroxides, carbonates, phosphates, silicates, and an accelerating composition which contains ethylene glycol monophenyl ether and a phenolic selected from phenol, o-phenylphenol, o-methoxyphenol, p-secondary butyl phenol, o-isopropylphenol, Bisphenol A, β-naphthol, p-aminophenol, p-nitrophenol, and cresylic acid. Desirably,

the alkaline composition is dissolved in water, in amounts within the range of about 0.25 to 5 pounds per gallon, and the resulting aqueous solution applied to the painted substrate for a period sufficient to effect substantial loosening of the paint coating.

3,681,251
PAINT REMOVAL FORMULATION
Charles R. W. Morison, South Clearwater, Fla., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Aug. 17, 1970, Ser. No. 64,568
Int. Cl. C09d *9/00*
U.S. Cl. 252—162 **7 Claims**

A paint remover composition comprising a methylene chloride-methanol solvent, a quaternary nitrogen containing cellulose ether, and a compound selected from the group consisting of calcium oxide, sodium hydroxide, monoethanolamine, chromium sulfate, copper chloride, sodium metasilicate, barium chloride, lithium sulfate, lithium chloride, and sodium chloride.

3,681,252
LIQUID LASER CONTAINING CYCLOOCTATETRAENE
Charles Brecher, Little Neck, N.Y., Adam Heller, Sharon, Mass., and Romano Pappalardo, Westbury, N.Y., assignors to General Telephone & Electronics Laboratories Incorporated
Filed Oct. 29, 1970, Ser. No. 85,195
Int. Cl. F21k *2/02;* **H01s** *3/00*
U.S. Cl. 252—301.2 R **9 Claims**



A dye laser utilizing an active material comprising a dye selected from the group consisting of Rhodamine 6G, Rhodamine S, Rhodamine B, Acridine Red, Kiton Red S and Uranine in solution with the triplet state quencher cyclooctatetraene. The resultant solution provides a dye laser having relatively long high energy output pulses.

3,681,253
COMPOSITION AND METHOD OF STABILIZING FOAM
Ralph P. Arthur, Parkersburg, and M. Joanne Belden, Washington, W. Va., assignors to Borg-Warner Corporation, Chicago, Ill.
No Drawing. Filed Apr. 26, 1968, Ser. No. 724,595
Int. Cl. B01j *13/00;* **C11d** *9/22*
U.S. Cl. 252—307 **1 Claim**

A method of increasing and stabilizing foam by adding a maleic anhydride-conjugated diene copolymer or salt thereof to a foam forming composition prior to formation of the foam.

3,681,254
METHOD OF FORMING A GELABLE DISPERSION
Andrew D. Becker, Stoneham, Mass., assignor to Itek Corporation, Lexington, Mass.
No Drawing. Filed Mar. 30, 1970, Ser. No. 23,972
Int. Cl. B01j *13/00*
U.S. Cl. 252—311 **8 Claims**

A method is disclosed for forming a stable gelable dispersion wherein a temperature-dependent gel former is uniformly dispersed throughout a liquid medium which is to be gelled. The method comprises: (a) adding the gel former to the liquid medium in sufficient quantities to gel it; (b) heating the mixture to an elevated dispersion temperature which is below the gel critical temperature; (c) uniformly dispersing the gel former throughout the liquid medium at the elevated dispersion temperature and, (d) cooling said dispersion to an ambient temperature significantly below said elevated dispersion temperature.

3,681,255
PROCESS FOR THE PREPARATION OF LIQUID CALIBRATION FLUIDS
John F. Wilfore, Schenectady, N.Y., assignor to General Electric Company
No Drawing. Filed Sept. 3, 1970, Ser. No. 69,435
Int. Cl. B01k *3/00*
U.S. Cl. 252—408 **9 Claims**

Aqueous bicarbonate solutions when equilibrated with given concentrations of carbon dioxide-containing gases will exhibit a predeterminable pH behavior. By preselection of bicarbonate concentration and equilibration gas compositions, liquid calibration fluids suitable to standardized instruments, e.g., blood measuring devices, may be prepared having given pH concentrations and partial pressures of carbon dioxide and other gases, e.g., oxygen.

3,681,256
METHOD OF PREPARING POLYMERIZATION CATALYST
Harry W. Blunt, Hickory Hill, Del., assignor to Hercules Incorporated, Wilmington, Del.
No Drawing. Filed Feb. 16, 1971, Ser. No. 115,697
Int. Cl. C08f *1/42*
U.S. Cl. 252—429 A **2 Claims**

Catalyst particles suitable for preparing alpha-olefin polymers in the form of 5 to 15 micron particles are prepared by reducing $TiCl_4$ with an alkylaluminum dihalide at controlled levels of titanium concentration, aluminum concentration, and Al/Ti ratio. The reduction is carried out at room temperature under quiescent conditions.

3,681,257
CATALYST FOR ELECTROLESS PLATING
Joseph Peppo Levy, Harrow, Middlesex, England, assignor to Sperry Rand Limited, London, England
No Drawing. Filed June 19, 1970, Ser. No. 49,571
Claims priority, application Great Britain, June 21, 1969, 31,456/69; Aug. 8, 1969, 39,685/69
Int. Cl. B01f *17/30*
U.S. Cl. 252—430 **2 Claims**

A lyophilic material is prepared by hydrolysing egg albumen with a solution of lithium hydroxide, precipitating out lithium by treatment with carbon dioxide and filtering, precipitating out the remainder of the lithium by treatment with phosphoric acid and filtering; adding acetic acid to the resulting liquor and filtering off the precipitate which is the lyophilic material. For use as a colloid the lyophilic material is dissolved in lithium hydroxide to form an unusually robust colloid. A preferred use for this colloid is as a protective colloid to protect colloidal metal particles (e.g. palladium) in a catalyst for use in electroless plating.

3,681,258
ACTIVATION OF AN OXIDATIVE DEHYDROGENATION CATALYST
Emory W. Pitzer, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Nov. 24, 1969, Ser. No. 879,636
Int. Cl. B01j *11/82*
U.S. Cl. 252—437 **3 Claims**

Oxidative dehydrogenation catalysts consisting essentially of phosphorus, tin, a metal selected from the

group consisting of Group Ia metals and Group IIa metals, and oxygen, wherein the phosphorus is present in the range of 0.1 to 16 weight percent, the tin is present in the range of 15 to 75 weight percent, the Group Ia or Group IIa metal is present in the range of 0.1 to 10 weight percent and the oxygen is present in sufficient quantity to produce the remaining total catalyst composition, are activated by contacting the formed particles of catalyst with water.

3,681,259

MANUFACTURE OF LOW BULK DENSITY-HIGH STRENGTH SPHERICAL CHROMIA-ALUMINA PARTICLES

Kenneth D. Vesely, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 29, 1969, Ser. No. 888,562
Int. Cl. B01j *11/44*
U.S. Cl. 252—448 **7 Claims**

Low density chromia-alumina gel spheres of improved crushing strength are prepared by the oil-drop method utilizing a dropping mixture comprising a chromia-alumina sol and hexamethylenetetramine, said dropping mixture having a metals/chloride weight ratio of from about 1:1 to about 1.5:1, a hexamethylenetetramine/chloride mole ratio of from about 1.1:4 to about 1.65:4 and a chromium-aluminum metals content of from about 7 to about 10 weight percent. After dropping, the spheres are pressure aged at a temperature of from about 240° to about 500° F. for a period of from about 1 to about 5 hours, and are then washed, dried and calcined.

3,681,260

CATALYST AND METHOD OF MAKING SAME

Walter D. Foucher, Jr., Wappingers Falls, N.Y., and Thomas W. Norman, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 26, 1968, Ser. No. 787,264
Int. Cl. B01j *11/32*
U.S. Cl. 252—465 **7 Claims**

A catalytic article composed of a catalyst support and an adherent catalytically active layer of a crystalline material having a composition expressed in terms of oxides as follows: $(CuO)_x \cdot (Al_2O_3)_y \cdot nH_2O$ where x is from 1 to 3 and y is from 1 to 4. The novel article is prepared by contacting a support with a source of aluminum, a base, a source of copper and an ammonical reagent where the reagent and copper are present in the ratio of NH_3 to Cu of at least four. The catalytic article finds application in such processes as the oxidation of olefins, incorporation into catalytic mufflers for the oxidation of exhaust gases, in oxyhalogenation reactions and for the conversion of SO_2 to SO_3 in flue gases.

3,681,261

RESISTORS, COMPOSITIONS, PASTES, AND METHOD OF MAKING AND USING SAME

Daniel W. Mason, West Peabody, Mass., and Bernard Greenstein and John M. Woulbroun, Toledo, Ohio, assignors to Owens-Illinois, Inc.

No Drawing. Filed July 27, 1970, Ser. No. 58,740
Int. Cl. B44d *1/02*; H01b *1/06*
U.S. Cl. 252—514 **7 Claims**

Palladium oxide or other metal oxide resistors for microelectronic circuitry are provided with a high degree of reproducibility and stability by first concentrating to powder form a liquid mixture of a resistor metal-organo metallic compound, at least one other stabilizer metal in organometallic form, and an anti-agglomerating agent which will not burn off during processing to final resistor form. The powder is then alloyed and the resistor metal oxidized. The resulting alloy is then formed into a resistor paste by admixing it with a glass binder (either before or after oxidation) and a liquid carrier vehicle. The paste is printed in the desired pattern, dried and fired to produce the resistor in final form.

3,681,262

COMPOSITIONS FOR MAKING ELECTRICAL ELEMENTS CONTAINING PYROCHLORE-RELATED OXIDES

Robert J. Bouchard, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 880,327, Nov. 26, 1969, which is a continuation-in-part of abandoned application Ser. No. 692,108, Dec. 20, 1967. This application Oct. 1, 1970, Ser. No. 77,309
Int. Cl. H01b *1/06*
U.S. Cl. 252—520 **16 Claims**

Compositions, which yield electrical elements such as resistors having a wide range of resistances, low TCR's and good stability properties, comprising (1) an oxide of the formula

$$(M_xBi_{2-x})(M'_yM''_{2-y})O_{7-z}$$

wherein

M is at least one metal selected from the group consisting of yttrium, thallium, indium, cadmium, lead and the rare earth metals of atomic number 57–71, inclusive,

M′ is at least one metal selected from the group consisting of platinum, titanium, tin, chromium, rhodium, rhenium, zirconium, antimony and germanium, M″ is at least one of ruthenium and iridium, and (2) dielectric material.

3,681,263

PROCESS FOR THE PREPARATION OF PERFUME COMPOSITIONS OR PERFUMED ARTICLES RESPECTIVELY

Leendert Maarten van der Linde and Harmannus Boelens, Huizen, Netherlands, assignors to N.V. Chemische Fabriek "Naarden," Naarden, Netherlands

Filed Feb. 20, 1969, Ser. No. 801,005
Claims priority, application Netherlands, Feb. 23, 1968, 6802619
Int. Cl. C11b *9/00*
U.S. Cl. 252—522 **1 Claim**

Perfume compositions, materials or articles comprising conventional constituents such as solvents, diluents and adjuvants and containing as an essential ingredient at least one compound selected from the group consisting of

2,4-dimethyl 6-n-butyl 2,3-dihydro-6H-pyran,
2,4-dimethyl 6-n-butyl 5,6-dihydro-2H-pyran, and
2-methyl-4-methylene 6-n-butyltetrahydropyran.

Also method of imparting desirable aroma to an object by applying thereto said perfume composition or material.

3,681,264

BILGE CLEANER COMPOSITION

Gerard Prial, 4055 New York Ave., Island Park, N.Y. 11558, and Chester J. Pigulski, 143—51 110th Ave., Jamaica, N.Y. 11435

No Drawing. Filed Jan. 8, 1971, Ser. No. 105,104
Int. Cl. C11d *3/066*
U.S. Cl. 252—526 **5 Claims**

A composition which is particularly useful as a bilge cleaner and as an oil slick dispersant is comprised of an aqueous solution of from about 5 to 7 percent by weight of a mixture of alkylolamide alkyl aryl sulfonate and monobutylbiphenyl sodium monosulfonate and of from about 1.5 to 3.0 percent by weight of tetrasodium pyrophosphate.

3,681,265

PREPARATION OF INORGANIC POLYMERS

Paul C. Krueger, Warren, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Continuation of application Ser. No. 741,349, July 1, 1968. This application Aug. 3, 1970, Ser. No. 64,137

Int. Cl. C08g *33/16, 33/20*

U.S. Cl. 260—2 P 8 Claims

Polymers having an inorganic backbone are prepared by reacting trivalent cobalt salts or trivalent manganese salts with a phosphinic acid in the presence of an organic solvent at temperatures of 75 to 150° C.

3,681,266

COPOLYMERS FROM A POLYFLUORO AMIDO SILANE AND A POLYALCOHOL

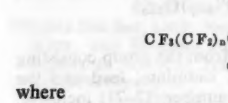
Elemer Domba, Olympia Fields, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed May 24, 1971, Ser. No. 146,435

Int. Cl. C08f *11/04*

U.S. Cl. 260—25 7 Claims

Polymeric reaction products formed by reacting a monomer



where

n=0–20, and optimum 6

x=1–4 and optimum 3

R=hydrocarbon, lower alkyl preferred and ethyl optimum

with a polyhydric alcohol such as glycerol, sorbitol, pentaerythritol and polyalkyleneoxy adducts. The products have unusual oil and water repellent properties.

3,681,267

PROPIOLACTONE STABILIZATION

Neil R. Mayne and Johan van Olmen, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed July 16, 1970, Ser. No. 55,611

Int. Cl. C07d *3/00*

U.S. Cl. 260—343.9 4 Claims

Stabilizing propiolactones by incorporating therein a minor amount of sulfur dioxide. The resulting stabilized compositions, comprising a propiolactone substituted on the alpha carbon thereof with from 1 to 2 alkyl substituents and a minor amount of sulfur dioxide, are characterized by an enhanced stability during their manufacture and storage as shown by a reduced tendency toward autopolymerization.

3,681,268

MASTIC ADHESIVE COMPOSITION CONTAINING ZINC SALT OF FORMALDEHYDE-MODIFIED ROSIN

Albert R. Bunk, Columbus, Bailey Bennett, Worthington, and David A. Berry, Columbus, Ohio, and Noah J. Halbrook, Walter H. Schuller, and Ray V. Lawrence, Lake City, Fla., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Feb. 27, 1970, Ser. No. 15,235

Int. Cl. C08d *9/12*; C08h *11/06*; C08f *47/24*

U.S. Cl. 260—2.3 5 Claims

Mastic adhesive compositions having excellent properties for adhesive applications in the building trades industry, which compositions comprise relative proportions by weight of: 100 parts of a rubber selected from the group consisting of reclaim, natural, styrene-butadiene rubbers; 50 to 200 parts by weight of a zinc salt of the formaldehyde-modified rosin from reacting 2 to 10 parts by weight of formaldehyde with 100 parts by weight of molten rosin, which zinc salt of formaldehyde-modified rosin has a B & R softening point between 95° and 150° C.; and a hydrocarbon vehicle for the rubber.

3,681,269

SWELLABLE POLYMERS OF METHACRYLIC AND ACRYLIC ACID ESTERS

Walter Heitz, Mainz-Kostheim, and Klaus Pfitzner, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

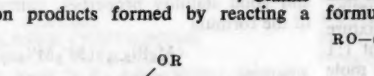
No Drawing. Filed Feb. 13, 1970, Ser. No. 11,310

Claims priority, application Germany, Feb. 15, 1969, P 19 07 666.5

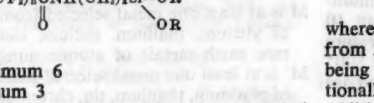
Int. Cl. C08f *3/64, 3/66*

U.S. Cl. 260—2.5 B 13 Claims

The polymerization of dimethacrylate and diacrylate esters of alkylene and polyalkylene glycols of the formula



wherein n is an integer from 0 to 10^5 and trimethacrylate and triacrylate esters of polyalkylene oxide triols of the formula



wherein n_1, n_2 and n_3 are integers the sum of which is from 3 to 10^4, X in each instance being H or CH_3 and R being the acyl group of methacrylic or acrylic acid, optionally in the presence of up to 40% by weight of an additional cross-linking agent, produces swellable gels useful as gel chromatography agents.

3,681,270

PROCESS FOR THE MANUFACTURE OF FOAM MATERIALS CONTAINING PLASTICIZER FROM POLYVINYLCHLORIDE AND COPOLYMERS THEREOF

Otto Fuchs, Oberlar, Germany, assignor to Dynamit Nobel A.G., Troisdorf, Germany

Filed May 22, 1970, Ser. No. 39,815

Int. Cl. C08f *47/10, 29/18, 45/38*

U.S. Cl. 260—2.5 P 6 Claims

Process for the preparation of foam materials of vinylchloride copolymers having a K value of about 65 to 82 by treating a plastisol of this copolymer with a gas which is a carbon dioxide-air or a carbon dioxide-nitrogen mixture at a temperature of between 0 and 30° C., and preferably between 10 and 25° C., and at a pressure of about 80 to 120, preferably 90 to 110, atmospheres by expanding the pressurized gas-plastisol to atmospheric pressure, setting the thus formed foam material, and recycling excess gas after foaming.

3,681,271

PROCESS FOR THE PRODUCTION OF POLYURETHANE FOAM FROM POLYISOCYANATE AND POLYETHER POLYOL OR POLYESTER POLYOL IN THE PRESENCE OF STANNOXANE CATALYST

Makoto Yokoo, Toyonaka, Akizo Keshi, Takatsuki, Norishige Hashimoto, Nishinomiya, and Shigenobu Nakahara, Suita, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 754,716, Aug. 22, 1968, which is a continuation-in-part of application Ser. No. 397,609, Sept. 18, 1964. This application Sept. 25, 1970, Ser. No. 75,727

Claims priority, application Japan, Sept. 27, 1963, 38/51,576

Int. Cl. C08g *22/42, 22/46*

U.S. Cl. 260—2.5 AC 17 Claims

As catalyst for the reaction of an isocyanate with a compound having active hydrogen atoms, certain octa-

alkyl-stannoxanes(I) e.g. octabutyl-dichloro-dihydroxy-stannoxane, octabutyl - diacetoxy-dihydroxy-stannoxane, octabutyl - tetraacetoxy-stannoxane, octabutyl-dimethoxy-diacetoxy - stannoxane, octabutyl-tetraisocyanate-stannoxane, octabutyltetraisothocyanate-stannoxane, and others named in the specification infra, unexpectedly have a catalytic activity which is several tenfold times higher than that of the compounds (e.g. dibutyltin-dilaurate, tin(II)-2-ethylhexoate, triethylenediamine, etc.) which have heretofore been regarded as having the highest catalytic activity for the said reaction. Compounds I can be used as sole catalyst for the production of polyurethane foam, and are more stable than hitherto-employed catalysts.

3,681,272

URETHANE FOAM FORMING PROCESS USING AS A GEL CATALYST A MIXTURE OF 2-ETHYLHEXOIC ACID AND A STANNOUS COMPOUND

Carl R. Gloskey, Hague, Netherlands, assignor to M & T Chemicals Inc., Greenwich, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 829,789, June 2, 1969. This application Apr. 29, 1971, Ser. No. 138,737

Int. Cl. C08g *22/42, 22/44*

U.S. Cl. 260—2.5 AC **6 Claims**

A process of making a polyurethane plastic which comprises mixing an organic compound having reactive hydrogen atoms as determined by the Zerewitinoff method having a molecular weight of at least about 500, an organic polyisocyanate, water and a catalytic amount of a catalyst containing a carboxylic acid and at least one member of the group consisting of stannous hydroxide, bis(ethylhexanoxyloxytin) oxide, ethylhexanoxyltin hydroxide and bis(hydroxystannous) oxide.

3,681,273

NONBURNING, INTUMESCENT FLEXIBLE POLYURETHANE FOAM

David John Kelly, Aston Township, Delaware County, Pa., assignor to Scott Paper Company, Delaware County, Pa.

No Drawing. Filed Oct. 14, 1969, Ser. No. 871,813

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 AJ **8 Claims**

A nonburning imparting amount of a mixture of (a) a nitrogen and phosphorous-containing compound, and (b) a nitrogen-containing polyol is incorporated in a foamable polyurethane-forming reaction mixture to produce a flame-retardant, intumescent and non-burning flexible polyurethane foam which would otherwise be consumed by exposure to a flame.

3,681,274

AMMONICAL FLUORIDES FOR FORMALDEHYDE RESIN SYSTEMS

Walter Richard Oetgen and James Cooley, Orangeburg, S.C., assignors to U.S. Plywood-Champion Papers Inc., New York, N.Y.

No Drawing. Filed July 23, 1970, Ser. No. 57,756

Int. Cl. C08g *51/18, 51/82*

U.S. Cl. 260—17.3 R **2 Claims**

An improved catalyst for amino resins, said catalyst being selected from the group consisting of ammonical fluorides. The resin catalyst system herein described is particularly useful in the rapid production of laminated materials, such as plywood, veneer faced hardboard, furniture, counter tops, etc.

3,681,275

ACRYLONITRILE COMPOSITION IMPROVED IN YELLOWNESS AND BRIGHTNESS AND PRODUCTION OF FIBERS THEREFROM

Kenji Takeya, Hideto Sekiguchi, Kunio Tanahashi, and Junji Tsuge, Saidaiji, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Jan. 16, 1970, Ser. No. 3,317

Claims priority, application Japan, Jan. 27, 1969, 44/6,194

Int. Cl. C08f *3/76;* **D06m** *13/10*

U.S. Cl. 260—23 R **9 Claims**

Acrylonitrile fibers improved in yellowness and brightness are obtained by including therein a monoester of glycerin with a higher fatty acid or a derivative of its monoester.

3,681,276

MIXTURE OF FATTY OIL AND POLYBUTADIENE TREATED BY ANY TWO OF THE FOLLOWING: BOILING, BODYING, REACTION WITH ACIDS OR ACID ANHYDRIDES

Masanori Nagahisa, Takatsuki-shi, Yoshimi Kusaka, Toyonaka-shi, Koji Iino, Nakagomura, and Zemichiro Yamamoto, Takada-shi, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

No Drawing. Filed Oct. 8, 1969, Ser. No. 864,866

Claims priority, application Japan, Oct. 22, 1968, 43/76,501, 43/76,502; Dec. 30, 1968, 44/96,577

Int. Cl. C01d *3/28, 3/36*

U.S. Cl. 260—23.7 R **10 Claims**

A mixture of natural drying or semi-drying oil and polybutadiene which has a number average molecular weight of 200 to 10,000 and more than 50 percent of 1,2-configuration of the butadiene unit in its polymeric claim gives a coating material having excellent properties when treated by a boiling treatment, a bodying treatment and an addition treatment. At least two of these three treatments must be used. The boiling operation is performed by contacting the oil component with air or oxygen at a temperature between 60° C. and 150° C., the bodying operation is performed by a thermal treatment at a temperature between 100° C. and 300° C. in an inert atmosphere and the addition or esterification operation is performed by reacting with organic compounds selected from the group consisting of mono or poly carboxylic compounds, anhydride thereof and cycloaliphatic dienes in an inert atmosphere.

3,681,277

PROCESS FOR PREPARING SOLVENT-FREE PRESSURE-SENSITIVE ADHESIVE FROM A POLYISOCYANATE, A POLYOXYALKYLATED DIOL OR POLYOL AND A TACKIFIER

Kurt Scholz and Kurt Hagenweiler, Remagen-Kripp, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 26, 1970, Ser. No. 5,902

Claims priority, application Germany, Jan. 28, 1969, P 19 04 102.2; Feb. 14, 1969, G 69 05 885.1

Int. Cl. C09j *3/26*

U.S. Cl. 260—24 **8 Claims**

Production of pressure-sensitive adhesives comprising a solution of a tackifying resin in a poly(alkylene oxide) and an organic diisocyanate or polyisocyanate.

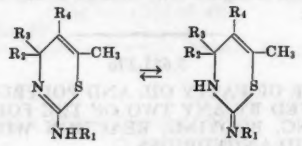
3,681,278

METHOD OF VULCANIZING RUBBERS WITH THIAZINES-1,3

Ivan Tikhonovich Gridunov, Boris Vladimirovich Unkovsky, Marina Maiorovna Donskaya, Leonid Vladimirovich Andreev, Galina Sergeevna Korolkova, Ljudmila Alexandrovna Ignatova, and Alexandr Grigorievich Grigorian, Moscow, U.S.S.R., assignors to Moskovsky Institut Tonkoi Khimicheskoi Tekhnologii Imeni M.V. Lomonosova, Moscow, U.S.S.R.

No Drawing. Filed Apr. 27, 1970, Ser. No. 32,374
Int. Cl. C08f *27/06*
U.S. Cl. 260—23.7 M 21 Claims

A method of producing rubbers comprising the preparation of a mixture by blending the following components: synthetic diene rubber, a vulcanizing agent, higher fatty acids as the dispersing agent, alkali metal and alkaline earth metal oxides, zinc oxide or chalk as the activator, and 2-alkyl (aryl)amino-4H-dihydro-1,3-thiazines as the vulcanization accelerator having the general formula:



where R_1 is hydrogen, alkyl or aryl; R_2, R_3, R_4 are hydrogen or methyl, or a mixture of the said accelerator and di-2-benzothiazolyldisulfide; the obtained mixture is vulcanized at 100–200° C.

3,681,279

PROCESS FOR PREPARING AN AROMATIC OIL AND NON-DISCOLORING RUBBER COMPOSITION CONTAINING SAID OIL

Ivor W. Mills, Glenolden, and Glenn R. Dimeler, West Chester, Pa., and Merritt C. Kirk, Jr., Claymont, Del., assignors to Sun Oil Company, Philadelphia, Pa.

Filed May 5, 1967, Ser. No. 636,493
Int. Cl. C08c *11/22*
U.S. Cl. 260—33.6 AQ 4 Claims

A novel light-stable rubber process oil containing 45–85 percent of aromatic hydrocarbons is obtained in high yield from a 40–10,000 SUS (at 100° F.) naphthenic distillate by a two-step aromatization process. In the first step, with a sulfactive catalyst the sulfur and nitrogen in the oil are greatly reduced and the aromatic content increases. In the second step, with Ni or noble metal catalyst, the aromatic content is further increased and the product oil has good color stability when aged in the presence of ultraviolet light. Oils produced by the process are especially useful when compounded with natural rubbers and synthetic elastomeric polymers (e.g., neoprene, GRS) which exhibit improved processability and physical properties when compounded with oils of high aromaticity.

3,681,280

PROCESS FOR THE PREPARATION OF PIGMENTED POLYOLEFIN FIBERS

Benito Beghelli, Francesco Vacanti, and Giampaolo Guerani, Terni, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Sept. 8, 1970, Ser. No. 78,346
Claims priority, application Italy, Sept. 11, 1969, 21,911/69
Int. Cl. C08f *45/04, 45/14*
U.S. Cl. 260—41 8 Claims

Method of preparing pigmented polyolefins. Involves admixing molten polyolefin with a liquid dispersion of pigment to finely disperse pigment in the polyolefin, thereafter removing the liquid from the molten mass, and then extruding.

3,681,281

FLAME-RETARDANT POLYESTERS

Charles V. Juelke, Morristown, and Louis E. Trapasso, Westfield, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed July 10, 1970, Ser. No. 54,010
Int. Cl. C09k *3/28;* D06p *3/54*
U.S. Cl. 260—45.8 N 11 Claims

Fibers and other shaped structures of polyesters such as polyethylene terephthalate are rendered flame-retardant by the incorporation of tertiary phosphine oxides such as triphenyl phosphine oxide or ethylene bis-di-phenylphosphine oxide optionally along with a synergist such as benzil, dibenzyl or triphenylmelamine.

3,681,282

SILIATED POLYHYDANTOIN, POLYESTER HYDANTOIN SILOXANES AND POLYHYDANTOIN AMIDE SILOXANES FOR USE AS WIRE COATINGS

Jerome A. Preston, Fort Wayne, Ind., assignor to Essex International, Inc.

No Drawing. Filed July 24, 1970, Ser. No. 58,173
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 E 5 Claims

Polyhydantoin polymers modified by reaction with specific silicone compounds provide a cured enamel characterized by a low coefficient of friction. For example, diphenyl hydantoin is reacted with a polyisocyanate or a polyamine to provide the polyhydantoin polymer. The preferred silicones have hydrogen hydroxyl alkyl or aryl radical attached to the silicon atoms, and are not three dimensional polymers, but straight chain. The hydantoin reacts with the reactive radical to produce a polymer having unexpected properties.

3,681,283

WASTE TREATMENT WITH NUCLEOPROTEIN FLOCCULATING AGENT

Mao H. Yueh, Minneapolis, Minn., assignor to General Mills, Inc.

No Drawing. Continuation-in-part of applications Ser. No. 752,758 and Ser. No. 752,759, both Aug. 15, 1968. This application Sept. 2, 1970, Ser. No. 69,118
Int. Cl. C02b *1/20*
U.S. Cl. 210—47 13 Claims

A flocculating agent is disclosed including nucleoprotein material which is treated with an organic or inorganic salt. The flocculation agent is used to remove suspended organic and/or inorganic waste materials from water.

3,681,284

AROMATIC-HETEROCYCLIC POLYMERS, PREPOLYMERS THEREOF AND PROCESS FOR PREPARATION THEREOF

Friedrich Grundschober, Onex, and John Harry Arendt, Cologny, Geneva, Switzerland, assignors to Centre National d'Etudes Spatiales, Paris, France

Filed Nov. 30, 1970, Ser. No. 93,748
Claims priority, application France, Dec. 1, 1969, 6941392
Int. Cl. C08g *20/32*
U.S. Cl. 260—47 CP 5 Claims

An aromatic-heterocyclic, thermally stable, ladder type polymer which contains, in its high molecular weight main chain, a link having dibenzodioxine as one of its constituents. The invention also relates to a process of preparing said polymer and a prepolymer formed during said process.

3,681,285

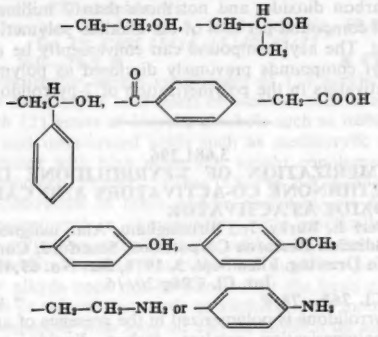
MANUFACTURE OF COLORLESS HIGH MOLECULAR POLYPHENYLENE ETHERS

Herbert Naarmann and Herbert Willersinn, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Feb. 24, 1971, Ser. No. 118,546
Int. Cl. C08g *23/18, 23/24*
U.S. Cl. 260—47 ET 7 Claims

A thermostable polyphenylene ether is obtained by oxidative coupling of a trisubstituted phenol and treatment of the polymeric product with a thiol.

Polyphenylene ethers obtained by the oxidative coupling of trisubstituted phenols in the presence of oxygen, an organic solvent and a copper/amine complex are acted upon at temperatures between 10° and 100° C. for at least 5 seconds by a thiol of the general formula HSR^2 where R^2 stands for a linear, branched or cyclic alkyl radical having from 2 to 20 carbon atoms,



These high molecular weight polyphenylene ethers are suitable for the production of thermostable plastics and coatings.

3,681,286

FIBER GLASS LAMINATES CONTAINING FURFURYL RESIN BINDER

Lloyd H. Brown, Crystal Lake, and David D. Watson, Barrington, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

No Drawing. Original application May 31, 1968, Ser. No. 733,282. Divided and this application Nov. 23, 1970, Ser. No. 92,228
Int. Cl. C08f *27/18*
U.S. Cl. 260—67 FA 2 Claims

Glass fibers are bound with a furfuryl alcohol-formaldehyde resin in a binder containing furfural, a high catalyst level, and a silane. The resulting article is cured at temperatures below 100° C.

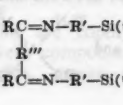
3,681,287

SILICEOUS MATERIALS BOUND WITH RESIN CONTAINING ORGANOSILANE COUPLING AGENT

Lloyd H. Brown, Crystal Lake, Andrew P. Dunlop, Riverside, and Daniel S. P. Eftax, Barrington, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

No Drawing. Filed Mar. 3, 1971, Ser. No. 120,736
Int. Cl. C08g *1/00;* C08f *5/00*
U.S. Cl. 260—67 FA 8 Claims

This invention relates to a method of binding siliceous materials with an acid catalyzed thermosetting resin containing an organosilane of the formula:



wherein R is a monovalent hydrocarbon radical free of aliphatic unsaturation, or hydrogen; R′ is a divalent aliphatic hydrocarbon radical; R″ is alkyl, aryl, heterocyclic, and substituted derivatives thereof; and R‴ is a divalent hydrocarbon radical free of aliphatic unsaturation.

3,681,288

STORAGE-STABLE POLYURETHANE PREPOLYMERS CONTAINING MALONITRILE

Yves Bonin and Jean Robin, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Apr. 2, 1970, Ser. No. 25,289
Claims priority, application France, Apr. 4, 1969, 6910477; Nov. 19, 1969, 6939761, 6939762
Int. Cl. C08g *22/04*
U.S. Cl. 260—77.5 NC 7 Claims

The stability of isocyanate-terminated polyurethane prepolymer compositions derived from a polyhydroxylic polyether is improved by including malonitrile in such compositions.

3,681,289

CLEAR COATING SYSTEM COMPRISING AN ISOCYANATE CURED TERPOLYMER

Uno Kruse, Neptune, and Daniel F. Herman and Rudolph S. Wilsher, Princeton, N.J., assignors to N L Industries, Inc., New York, N.Y.

No Drawing. Filed Jan. 22, 1970, Ser. No. 5,142
Int. Cl. C08g *22/16, 41/00;* C09d *3/72*
U.S. Cl. 260—77.5 CR 5 Claims

A clear coating system comprising an isocyanate cured terpolymer of hydroxyethyl methacrylate, ethylhexyl acrylate and diacetone acrylamide, useful, inter alia, for protecting wood surfaces; and process for making same.

3,681,290

AROMATIC DIAMINES CONTAINING ESTER GROUPS AND THE PRODUCTION OF POLYURETHANE ELASTOMERS THEREFROM

Walter Meckel, New Martinsville, W. Va., and Erwin Muller, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of application Ser. No. 866,373, Oct. 14, 1969. This application Feb. 2, 1971, Ser. No. 112,027
Claims priority, application Germany, Jan. 28, 1970, P 20 03 706.3
Int. Cl. C08g *22/04*
U.S. Cl. 260—77.5 AM 19 Claims

Novel aromatic diamines containing ester groups wherein the amino groups are in the m- and/or p-position relative to the ester group, and with a substituent in the o-position to at least one amino group are useful to prepare polyurethane elastomers therefrom with an organic diisocyanate and an organic compound containing at least two hydroxyl groups and having a molecular weight of from about 800 to about 5000, and if desired an organic compound containing at least two hydroxyl groups and having a molecular weight of from about 50 to about 500.

3,681,291

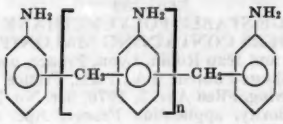
LIQUID CASTABLE ELASTOMERS

Obaidur Rahman Khan, Center Harbor, N.H., assignor to McCord Corporation, Detroit, Mich.

No Drawing. Filed Apr. 27, 1970, Ser. No. 32,395
The portion of the term of the patent subsequent to Apr. 20, 1988, has been disclaimed
Int. Cl. C08g *22/06*
U.S. Cl. 260—77.5 AQ 5 Claims

A liquid castable urethane composition consisting of the reaction product of (I) a prepolymer obtained by reacting a diisocyanate with a polyoxypropylene or a polytetramethylene ether diol or triol or a caprolactone polyol or any combination thereof with (II) a new and novel

curing system comprising (a) a polyoxypropylene glycol or polytetramethylene ether diol having a molecular weight of from about 500 to about 3000 or a polyoxypropylene of tetramethylene type triol having the same equivalent weight range; (b) an aromatic diol, (c) an aromatic amine corresponding to the formula



wherein *n* represents a value between 0.1 and 0.3 and (d) an organometallic catalyst.

3,681,292

POLYFLUOROCYANURATE POLYMERS AND PROCESS OF PREPARATION

Basil L. Loudas, St. Paul, and Herward A. Vogel, Oakdale, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 741,308, July 1, 1968. This application Mar. 30, 1971, Ser. No. 129,601

Int. Cl. C07d *55/00*; C08g *22/00*

U.S. Cl. 260—77.5 NC **10 Claims**

Methylol-terminated fluorocarbons are reacted with cyanogen halides to produce fluorocarbon cyanates which can be polymerized to produce polyfluorocyanurates having chemical resistance and thermal stability and useful in making shaped plastic or elastomeric articles.

3,681,293

CONTINUOUS POLYMERIZATION OF 2-PYRROLIDONE WITH CARBON DIOXIDE AS ACTIVATOR

Peter A. Jarovitzky and Frederick L. Maynor, Stamford, Conn., assignors to Radiation Research Corporation, Stamford, Conn.

Filed Sept. 3, 1970, Ser. No. 69,330

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 P **7 Claims**

A continuous process for the polymerization of 2-pyrrolidone, wherein the pyrrolidone is purified by distillation under vacuum, the purified pyrrolidone is divided into two parts, one part being reacted with an alkali metal hydroxide to form the alkali metal salt of 2-pyrrolidone, the mixture of 2-pyrrolidone and alkali metal salt thereof is contacted with carbon dioxide, the carbonated reaction mass is admixed with the second portion of the purified 2-pyrrolidone, the thus diluted, carbonated reaction mass is polymerized to a controlled extent and the partially polymerized mass is extruded into pellets, the pellets being cured, and freed of unreacted monomer and impurities to provide a final product comprising the pellets of 2-pyrrolidone.

3,681,294

POLYMERIZATION OF 2-PYRROLIDONE IN THE PRESENCE OF SO_2 WITH MIXTURE OF AN ALKALI METAL SULFITE AND AN ALKALI METAL BISULFITE

Peter A. Jarovitzky, Stamford, Conn., assignor to Radiation Research Corporation, Stamford, Conn.

No Drawing. Filed Sept. 3, 1970, Ser. No. 69,432

Int. Cl. C08g *20/16*

U.S. Cl. 260—78 P **7 Claims**

In the polymerization of 2-pyrrolidone in the presence of an alkaline polymerization catalyst and sulfur dioxide as a polymerization activator, the improvement which comprises effecting the polymerization in the presence of a mixture of an alkali metal sulfite and an alkali metal bisulfite which has been added to the reaction mass before the polymerization, the sulfur dioxide being not more than 0.90 mol per mol of alkaline polymerization catalyst.

3,681,295

POLYMERIZATION OF 2-PYRROLIDONE USING N-ACYL COMPOUNDS AS CO-ACTIVATORS WITH CARBON DIOXIDE AS ACTIVATOR

Peter A. Jarovitzky, Stamford, Conn., assignor to Radiation Research Corporation, Stamford, Conn.

No Drawing. Filed Sept. 3, 1970, Ser. No. 69,498

Int. Cl. C08g *20/16*

U.S. Cl. 260—78 P **9 Claims**

An improved process for the polymerization of 2-pyrrolidone to provide high molecular weights and high rates of conversion comprising polymerizing 2-pyrrolidone in the presence of an alkaline polymerization catalyst, carbon dioxide, and not more than 7 millimols of an acyl compound per mol of the alkaline polymerization catalyst. The acyl compound can conveniently be any of the acyl compounds previously disclosed as polymerization activators in the polymerization of 2-pyrrolidone.

3,681,296

POLYMERIZATION OF 2-PYRROLIDONE USING AZETIDINONE CO-ACTIVATORS AND CARBON DIOXIDE AS ACTIVATOR

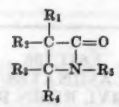
Robert E. Burks, Jr., Birmingham, Ala., assignor to Radiation Research Corporation, Stamford, Conn.

No Drawing. Filed Sept. 3, 1970, Ser. No. 69,499

Int. Cl. C08g *20/16*

U.S. Cl. 260—78 P **7 Claims**

2-pyrrolidone is polymerized in the presence of an alkaline polymerization catalyst, carbon dioxide, and an azetidinone-(2) of the formula:



wherein R_1, R_2, R_3, R_4 and R_5 are independently hydrogen, C_1–C_6 alkyl, phenyl, C_1–C_6 haloalkyl, halophenyl and tolyl.

3,681,297

SYNTHESIS OF POLYBENZOTHIAZOLINES AND POLYBENZOTHIAZOLES BY REACTING A DIALDEHYDE WITH AN AROMATIC BIS-MERCAPTOAMINE

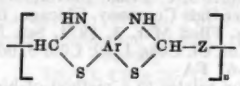
Gaetano Francis D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

No Drawing. Filed Nov. 10, 1970, Ser. No. 88,476

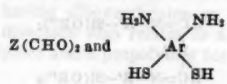
Int. Cl. C08g *9/06*

U.S. Cl. 260—72.5 **21 Claims**

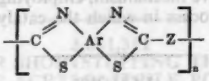
This invention deals with a novel, relatively simple process of preparing polybenzothiazolines,



by reacting dialdehydes,



in a solvent in an inert atmosphere and thereafter oxidizing the polybenzothiazolines to polybenzothiazoles,



wherein Ar represents a tetravalent aromatic moiety in which the nitrogen and sulfur atoms in each pair are disposed ortho to each other and Z represents a divalent hydrocarbon moiety as the residue of the dialdehyde, $Z(CHO)_2$. New types, as well as the known types of polybenzothiazoles have been prepared by this process.

3,681,298
COPOLYMER CONTAINING ISOBORNYL METHACRYLATE
Marvin J. Hurwitz, Elkins Park, and Walter G. De Witt III, Southampton, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
No Drawing. Filed Aug. 3, 1970, Ser. No. 60,654
Int. Cl. C08f *15/16, 15/40, 45/22*
U.S. Cl. 260—78.5 R **9 Claims**

Low molecular weight copolymers of (1) acrylic acid esters or methacrylic acid esters of alcohols such as methanol with (2) esters of bicyclic alcohols such as isobornyl alcohol and unsaturated acids such as methacrylic acid, as contrasted with high molecular weight copolymers of such monomers (1) and (2) (see U.S. Pat. No. 3,485,775) and as contrasted to other acrylic polymers, are found to be exceptional in compatibility with practically all types of polyesters and alkyds and with many other types of lacquer film-forming materials. The modifiers particularly for alkyds need not be selected on the basis of the oil length or solvent (aromatic or aliphatic), the modifiers being compatible with long oil alkyds, medium oil alkyds, and short oil alkyds. When small amounts of unsaturated amine-containing monomers or unsaturated carboxylic acids, or other polar monomers and combinations thereof, are incorporated in the polymer solutions, they become improved pigment dispersants. Such pigment dispersions can be let down with many types of synthetic resins and used by air-drying or baking the coated articles. Lacquers for metals, paints, and printing inks are examples of uses for such blends.

3,681,299
PROCESS FOR CROSSLINKING POLYMERS CONTAINING MERCAPTAN GROUPS
John H. Bateman, Haverstraw, N.Y., assignor to Ciba-Geigy Corporation
No Drawing. Filed May 1, 1970, Ser. No. 33,970
Int. Cl. C08g *23/00*
U.S. Cl. 260—79 **11 Claims**

Mercaptan containing polymers are crosslinked at ambient temperatures with polyfunctional dipolar compounds such as polyfunctional nitrile N-oxides or with precursors to the dipolar compounds such as polyfunctional hydroxamoyl halides and acid acceptors. The crosslinked products are useful as adhesives, sealants and coatings.

3,681,300
COPOLYMERS OF CYCLIC MONOOLEFINS AND OMEGA-ALKENYL-POLYCYCLOALKENE COMPOUNDS
Carl A. Uraneck and John E. Burleigh, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed July 27, 1970, Ser. No. 58,667
Int. Cl. C08f *19/00*
U.S. Cl. 260—80.78 **24 Claims**

Cyclic monoolefins are copolymerized with omega-alkenyl-polycycloalkene compounds. Further, copolymers of cyclic monoolefins, omega-alkenyl-polycycloalkene compounds and acyclic olefins are prepared. The polymers produced have improved properties which enables them to be used successfully in various applications.

3,681,301
MOISTURE CURABLE RESIN COMPOSITIONS
John H. Bateman, Haverstraw, N.Y., assignor to Ciba-Geigy Corporation
No Drawing. Filed Aug. 3, 1970, Ser. No. 60,721
Int. Cl. C08g *23/00*
U.S. Cl. 260—79 **19 Claims**

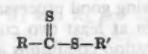
Compositions which cure to elastomers upon exposure to moisture comprise a resin containing a plurality of mercaptan groups, a polyfunctional hydroxamoyl halide and a latent base. The compositions are useful as sealants and caulking agents.

3,681,302
POUR DEPRESSANT COMPOSITIONS OF CRACKED ETHYLENE/PROPYLENE/DIENE TERPOLYMERS
William M. Sweeney, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.
No Drawing. Original application Aug. 12, 1966, Ser. No. 571,970, now Patent No. 3,499,741. Divided and this application Aug. 15, 1969, Ser. No. 869,423
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.78 **4 Claims**

An amorphous cracked ethylene-propylene-terpolymer pour depressant composition consisting of 10 to 90 percent ethylene, 5 to 70 percent propylene and 0.1 to 20 percent of a non-conjugated diene having from 5 to 30 carbon atoms, and a method of preparing same.

3,681,303
SULFENAMIDES OF CARBODITHIOIC ACID CONTAINING AZABICYCLONONANE
John Joseph D'Amico, Dunbar, W. Va., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Division of application Ser. No. 701,569, Jan. 30, 1968, now Patent No. 3,590,030, which is a continuation-in-part of application Ser. No. 463,341, June 11, 1965, which is a continuation-in-part of application Ser. No. 426,348, Jan. 18, 1965. This application Sept. 21, 1970, Ser. No. 74,146
Int. Cl. C08f *27/06*; C07d *41/04*
U.S. Cl. 260—79.5 B **9 Claims**

Compounds of the formula



where R and R′ are amino radicals of one to sixteen carbon atoms selected from the group consisting of alkylamino, dialkylamino, and heterocyclicamino, at least one of R and R′ being 3-azabicyclo[3.2.2]non-3-yl, and their use for accelerating vulcanization of rubber are described.

3,681,304
PROCESS FOR THE POLYMERIZATION OF CONJUGATED DIENES
Charles R. Johnson, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed July 29, 1970, Ser. No. 59,221
Int. Cl. C08d *1/04, 3/06*; C08f *19/08*
U.S. Cl. 260—83.7 **9 Claims**

Butadiene and/or isoprene, optionally with styrene, are polymerized continuously by introducing at least part of the monomer, hydrocarbon diluent, and a lithium based initiator into the bottom region of an elongated, vertical, pressurized reaction vessel. The materials are agitated, and additional monomer, if any, is introduced to the vessel as the materials flow from the bottom to the top of the reaction vessel, and then into a second vessel. The heat is contained within the reaction vessel. A portion of vapor is removed from the second vessel to control the pressure within it; in this manner the pressure, and hence

the temperature in the reaction vessel are controlled to permit some boiling in the top of the reaction vessel. The boiling produces agitation, and the removal of vapor raises the solids content of the materials. Vapors removed are condensed and recycled, and the remaining material is discharged from the second vessel.

3,681,305

TRANSPARENT, HIGH HEAT POLYSTYRENES

Michael R. Tirpak, Maywood, and Harold A. Rendleman, Bellwood, Ill., assignors to The Richardson Company, Des Plaines, Ill.

No Drawing. Filed Nov. 13, 1970, Ser. No. 89,488
Int. Cl. C08f *17/00*
U.S. Cl. 260—80.78 2 Claims

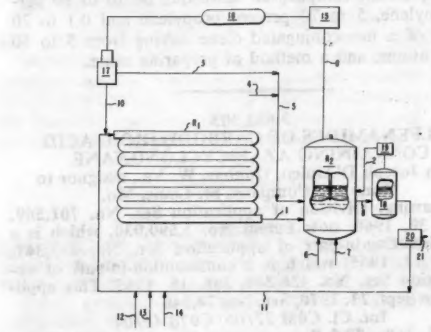
The present invention relates to a new terpolymer having high heat distortion resistance and excellent clarity. The terpolymer is derived from three monomers, namely, styrene, t-butylstyrene and methyl methacrylate, preferably copolymerized by a suspension process.

3,681,306

EPDM POLYMERIZATION PROCESS

John Francis Wehner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 24, 1969, Ser. No. 869,161
Int. Cl. C08f *1/28, 15/04, 15/40*
U.S. Cl. 260—80.78 9 Claims



Process for producing an ethylene/(C_3–C_{18}) alpha-olefin copolymer having good processability by polymerizing the monomers in at least two consecutive stages under stable polymerization conditions at a temperature less than about 150° C. at an average ethylene/alpha-olefin molar ratio in one stage at least 1.3 times the ratio in the other stage, to produce a copolymer containing 20–80% by weight ethylene units and having a molecular weight distribution at least 20% broader than that of a similar polymer prepared in a single stage.

3,681,307

NOVEL POLYMERIZATION PROCESS

Marco Wismer, Gibsonia, and Paul J. Prucnal, Monroeville, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 413,326, Nov. 23, 1964. This application Sept. 9, 1968, Ser. No. 758,622
The portion of the term of the patent subsequent to Feb. 17, 1987, has been disclaimed
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.7 10 Claims

This invention related to the interpolymerization of olefinically-unsaturated hydrocarbons by means of Ziegler catalysts. More particularly, this invention relates to a method of preparing non-rubbery interpolymers of a monoolefin monomer having a single copolymerizable ethylenic group, said interpolymer having an essentially saturated carbon atom in the polymer molecule and containing sufficient ethylenically-unsaturated groups in the polymer molecule to permit substantial curing of films thereof by oxidative mechanism, employing a Ziegler catalyst in a batch process in which the catalyst is incrementally added.

3,681,308

STIRRED, SCRAPED-SURFACE APPARATUS AND PROCESS FOR TREATING MATERIALS THEREIN

Howard B. Irvin and Paul H. Wagner, Bartlesville, Okla., assignors to Phillips Petroleum Company

Original application Dec. 23, 1966, Ser. No. 604,286. Divided and this application Mar. 2, 1970, Ser. No. 15,859
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.78 4 Claims

A stirred, scraped-surface polymerization reactor comprising an outer jacketed shell, an inner jacketed, open-ended tube axially positioned in said shell to provide fluid flow between the surrounding annulus and said tube, stirring and scraping means in said annulus for removing solution film from the enclosing walls, and stirring and scraping means in said tube for removing film from the tube wall, is provided with separate and independent means for operating the annulus and the tube stirrer-scrapers for more efficient operation in solution polymerization.

3,681,309

NOVEL PROCESS FOR COPOLYMERIZING ETHYLENE, A C_3–C_{10} ALPHA OLEFIN AND A 5,6-DIMETHYLENE 2-NORBORNENE

Henry S. Makowski, Scotch Plains, and Paul Borzel, Elizabeth, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed May 2, 1969, Ser. No. 821,508
Int. Cl. C08f *1/28, 5/00, 15/40*
U.S. Cl. 260—80.78 13 Claims

In accordance with certain of its aspects, this invention includes a method of preparing an elastomeric copolymer of ethylene, a C_3 to C_{10} alpha olefin, and a 5,6-dimethylene-2-norbornene characterized by high curability, high vulcanizability, high solubility in heptane, non-self-curability, high resistance to ozone attack, and containing conjugated residual unsaturation which comprises forming a monomer mixture containing ethylene as a first component, a C_3 to C_{10} alpha olefin as a second component, and a 5,6-dimethylene-2-norbornene as a third component; polymerizing said mixture in the presence of a compound of a transition metal as catalyst and an organometal compound as cocatalyst thereby forming a terpolymer of ethylene, C_3 to C_{10} alpha olefin, and said 5,6-dimethylene-2-norbornene wherein said terpolymer contains conjugated residual unsaturation derived from the 5,6-dimethylene moiety of said norbornene; and withdrawing said copolymer as product. The novel copolymer is further characterized by the presence of a saturated backbone polymer chain and two double bonds in conjugated relationship external to the backbone.

3,681,310

PROCESS FOR SUSPENSION POLYMERIZATION OF VINYL-TYPE MONOMERS

Kizyu Moriyama and Takeshi Moriwaki, Osaka, Japan, assignors to Daicel Ltd., Osaka, Japan

No Drawing. Filed Aug. 26, 1971, Ser. No. 175,379
Claims priority, application Japan, Aug. 28, 1970, 45/75,408
Int. Cl. C08f *3/76, 3/30, 7/04*
U.S. Cl. 260—85.5 R 3 Claims

Suspension polymerization of vinyl monomer is carried out in an aqueous suspension medium containing (A) 0.5 to 5.0 parts by weight, per 100 parts by weight of the vinyl monomer to be polymerized, of a suspension stabilizer selected from the group consisting of secondary calcium phosphate, tertiary calcium phosphate and mixtures

thereof, and (B) 0.01–5.0% by weight, based on the water content of the aqueous suspension medium, of primary potassium phosphate.

3,681,311

PROCESS FOR SHORTSTOPPING THE POLYMERIZATION OF ACRYLONITRILE POLYMER COMPOSITIONS

Luigi Patron, Venice, and Sergio Lo Monaco, Mestre, Italy, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Oct. 7, 1968, Ser. No. 765,620
Claims priority, application Italy, Oct. 6, 1967, 21,313/67
Int. Cl. C08f 3/76, 15/22
U.S. Cl. 260—85.5 6 Claims

Hydroxylamine salts have been found to be effective inhibitors and shortstopping agents for the redox catalyzed polymerization of acrylonitrile polymers, particularly where the redox catalyst system is composed of chlorate, chlorite or hypochlorite ions or mixtures thereof in solution, activated by sulfoxy reducing ions.

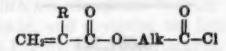
3,681,312

POLYMERS OF ACRYLOXYACYL CHLORIDES AND USE THEREOF

Martin J. Diamond, Oakland, and Howard L. Needles, Davis, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Mar. 20, 1970, Ser. No. 21,499. Divided and this application Nov. 12, 1971, Ser. No. 198,462
Int. Cl. C08f 3/64, 3/66, 15/16
U.S. Cl. 260—86.1 E 5 Claims

Acryloxyacyl chlorides of the structure



wherein R is H or CH_3 and Alk is a bivalent hydrocarbon radical containing 1 to 21 carbon atoms. These compounds may be homopolymerized or copolymerized with a different polymerizable monomer (e.g., a lower alkyl acrylate or methacrylate). The polymers are useful for application to fibrous materials, for example, to wool to make it shrink resistant.

3,681,313

METHOD FOR THE PREPARATION OF ETHYLENE-CARBOXYLIC ACID COPOLYMERS

Harry D. Anspon, Kansas City, Mo., and Bert H. Clampitt, Overland Park, and Ronald E. Gilbert, Shawnee Mission, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Continuation of application Ser. No. 694,046, Dec. 28, 1967. This application Aug. 27, 1970, Ser. No. 67,623
Int. Cl. C08f 27/00
U.S. Cl. 260—86.7 6 Claims

An ethylene-carboxylic acid copolymer is prepared by the thermal decomposition of an ethylene-isopropyl ester of acrylic or methacrylic acid in the presence of water vapor or ammonia.

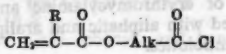
3,681,314

POLYMERS OF ACRYLOXYACYL CHLORIDES AND USE THEREOF

Martin J. Diamond, Oakland, and Howard L. Needles, Davis, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Mar. 20, 1970, Ser. No. 21,499. Divided and this application Nov. 12, 1971, Ser. No. 198,465
Int. Cl. C08f 3/64, 3/66, 15/16
U.S. Cl. 260—89.5 H 4 Claims

Acryloxyacyl chlorides of the structure—



wherein R is H or CH_3 and Alk is a bivalent hydrocarbon radial containing 1 to 21 carbon atoms. These compounds may be homopolymerized or copolymerized with a different polymerizable monomer (e.g., a lower alkyl acrylate or methacrylate). The polymers are useful for application to fibrous materials, for example, to wool to make it shrink resistant.

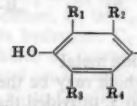
3,681,315

PROCESS FOR PRODUCING BUTADIENE POLYMER

Yoshiharu Yagi, Ibaragi, Akira Kobayashi, Nishinomiya, and Itsuro Hirata and Hiroshi Sato, Takatsuki, Japan, assignors to Sumitomo Chemicals Co., Ltd., Osaka-shi, Japan

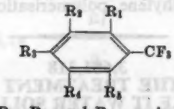
No Drawing. Filed May 18, 1970, Ser. No. 38,487
Claims priority, application Japan, May 19, 1969, 44/38,892; June 5, 1969, 44/44,488; Dec. 16, 1969, 44/101,433
Int. Cl. C08d 1/14, 3/06
U.S. Cl. 260—94.3 16 Claims

Process for producing butadiene polymer containing predominantly cis-1,4 structure which comprises polymerizing 1,3-butadiene in the presence of a catalyst system in a liquid medium at a temperature of −30 to 150° C., the catalyst system consisting essentially of (A) at least one of nickel and cobalt compounds, (B) a trialkyl aluminum compound and (C) at least one member selected from the group consisting of (1) the combination of a hydroquinone compound represented by the formula:



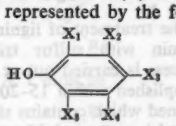
[I]

(wherein R_1, R_2, R_3 and R_4 are individually a hydrogen atom or a halogen atom or the combination of R_1 with R_2 and/or of R_3 with R_4 may represent an aromatic condensed ring(s) and the remaining ones are, if any, each a hydrogen atom or a halogen atom) with a benzotrifluoride compound represented by the formula:



[II]

(wherein R_1, R_2, R_3, R_4 and R_5 are individually a hydrogen atom, a halogen atom, an alkyl group or a fluoroalkyl group), (2) the hydroquinone compound represented by the Formula I, or (3) a penta-halogenated phenol compound represented by the formula:



[III]

(wherein X_1, X_2, X_3, X_4 and X_5 are individually a halogen atom).

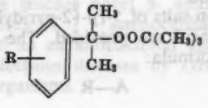
3,681,316

t-BUTYL CARBOCYCLIC SUBSTITUTED CUMENE PEROXIDES AS CURING AGENTS

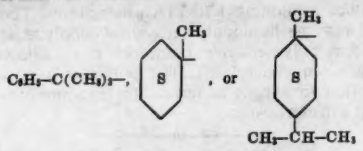
Frederick G. Schappell, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Original application Aug. 7, 1968, Ser. No. 750,745, now Patent No. 3,584,057. Divided and this application Feb. 22, 1971, Ser. No. 117,687
Int. Cl. C08d 5/02, 5/04; C08f 27/00
U.S. Cl. 260—94.9 GA 16 Claims

Peroxides of the formula



where R has the formula



are peroxides which cure polyethylene and other polymers and have odor-free, non-blooming and non-scorching properties.

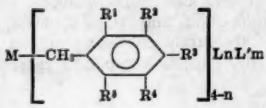
3,681,317

ORGANO-METALLIC COMPOUNDS AND USES THEREOF

Alexander Joseph Peter Pioli, William Brian Hollyhead, and Peter Frank Todd, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 27, 1970, Ser. No. 41,074
Claims priority, application Great Britain, May 28, 1969, 26,923/69, 26,924/69
Int. Cl. C08f *3/04, 7/06*
U.S. Cl. 260—94.9 B 2 Claims

Organometallic compounds of the general formula



where

M is a Group IV transition metal
R^{1-5} are substituents which may be the same or different
n is an integer from 0 to 3, provided that when M=titanium and *n*=0, R^{1-5} are not all hydrogen,
L is an anionic ligand
L' is a neutral ligand and
m is an integer from 0 to 2.

Also processes for their preparation, and their use as olefin, especially ethylene, polymerisation initiators.

3,681,318

PROCESS FOR THE TREATMENT OF LIGNIN TO MAKE IT WATER SOLUBLE

Lucio Sion Nahum, Milan, Italy, assignor to Vita Mayer & C. Gia F. LLI Vita S.A.S., Milan, Italy

No Drawing. Filed Apr. 4, 1969, Ser. No. 813,765
Int. Cl. C07g *1/00*
U.S. Cl. 260—124 A 8 Claims

A process for the treatment of lignin, consisting in the treatment of lignin with sulfur trioxide in organic medium. The process is carried out at room temperature and can be accomplished within 15–20 minutes. A modified lignin is obtained which contains strong acidic groups in the molecule and is water soluble.

3,681,319

AMINE ADDITION SALTS OF 5-[p-(2-PYRIDYLSULFAMYL)-PHENYLAZO]-SALICYLIC ACID

Bernt Jabes Lindberg, Uppsala, Sweden, assignor to Aktiebolaget Pharmacia, Uppsala, Sweden

No Drawing. Continuation of application Ser. No. 603,437, Dec. 21, 1966. This application Jan. 30, 1970, Ser. No. 7,357
Claims priority, application Sweden, Dec. 21, 1965, 16,526/65
Int. Cl. A61k *37/00;* C07c *107/06*
U.S. Cl. 260—156 6 Claims

Amine addition salts of 5-[p-(2-pyridylsulfamyl)-phenylazo]-salicylic acid are provided. The amine is represented by the formula:

wherein A is either

or

4-morpholino, or
piperidino; and

wherein R is either tris-hydroxymethyl-methyl, 2-hydroxyethyl, 2-hydroxypropyl, 3-hydroxypropyl, 2-methoxyethyl, 3,4,5,6-tetrahydroxyhexanal - 2 - yl, or 2,3,4,5,6-pentahydroxyhexyl; and R_1 and R_2 are either hydrogen, methyl, ethyl, or 2-hydroxyethyl. The present compounds can be used for the treatment of ulcerative colitis and rheumatoid arthritus.

3,681,320

PREPARATION OF DISAZO J ACID UREA DYESTUFFS

Richard C. Franklin, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 13, 1970, Ser. No. 2,650
Int. Cl. C09b *33/02*
U.S. Cl. 260—175 3 Claims

Preparation of storage-stable aqueous solutions containing 10–25 weight percent of a disazo J acid urea dye by coupling an aryl diazonium salt, for example, a salt from Broenner's acid, and J acid urea, at a molar ratio of about 2:1, in an aqueous medium, at a pH of about 3–9, at a temperature of about 0–65° C., in the presence of triethanolamine as the acid acceptor.

3,681,321

NOVEL COMPOUNDS RELATED TO LINCOMYCIN, A PROCESS FOR MAKING THE SAME, AND A PROCESS FOR CONVERTING THEM TO LINCOMYCIN AND LINCOMYCIN ANALOGS

Barney J. Magerlein, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 867,362, Oct. 17, 1969. This application May 6, 1970, Ser. No. 35,281
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R 5 Claims

Lincomycin is formed by tosylating methyl 1-thio-α-D-galacto-octopyranoside to form methyl 6-O-(p-toluenesulfonyl)-1-thio-α-D-galactopyranoside, acylating the resulting compound to form the peracylate, replacing the tosyl group with iodine to form peracylated methyl 6-deoxy-6-iodo - 1 - thio-α-D-galactopyranoside, replacing the iodo group by a nitro group to form peracylated methyl 6-deoxy-6-nitro-1-thio-α-D-galactopyranoside, treating the latter with acetaldehyde and sodium methoxide to form methyl 6 - deamino-6-nitro-α-thiolincosaminide, reducing the latter with lithium aluminum hydride to form methyl α-thiolincosaminide, and acylating the latter with trans-1-methyl-4-propyl-L-2-pyrrolidinecarboxylic acid. By substituting other aldehydes and/or other 1-thio-α-D-galactopyranosides, analogs of lincomycin are obtained.

3,681,322

ADDUCTS OF ALIPHATIC AND ARALIPHATIC ALDEHYDES AND ERYTHROMYCYLAMINE OR ERYTHROMYCYL B AMINE

Barbara S. Kitchell and Koert Gerzon, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,145
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 E 7 Claims

Derivatives of erythromycylamine and erythromycyl B amine formed with aliphatic and araliphatic aldehydes are useful as antibiotics.

3,681,323
6,9-OXYGEN BRIDGED ERYTHROMYCIN DERIVATIVES

Paul Kurath, Waukegan, Richard Stephen Egan, Mundelein, and Peter Hadley Jones, Lake Forest, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Sept. 24, 1970, Ser. No. 75,249
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 E 4 Claims

8,9-anhydroerythromycin B 6,9-hemiketal and 9-dihydroerythromycin A and B 6,9-epoxides are useful as antimicrobial agents.

3,681,324
INTERMEDIATES FOR MAKING LINCOMYCINS AND PROCESS FOR PREPARING THE SAME

Barney J. Magerlein, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 867,362, Oct. 17, 1969. This application May 6, 1970, Ser. No. 35,254
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R 5 Claims

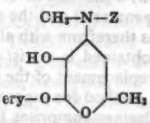
Lincomycin is formed by tosylating methyl 1-thio-α-D-galactooctopyranoside to form methyl 6-O-(p-toluenesulfonyl)-1-thio-α-D-galactopyranoside, acylating the resulting compound to form the peracylate, replacing the tosyl group with iodine to form peracylated methyl 6-deoxy-6-iodo - 1 - thio-α-D-galactopyranoside, replacing the iodo group by a nitro group to form peracylated methyl 6-deoxy-6-nitro-1-thio-α-D-galactopyranoside, treating the latter with acetaldehyde and sodium methoxide to form methyl 6-deamino-6-nitro-α-thiolincosaminide, reducing the latter with lithium aluminum hydride to form methyl α-thiolincosaminide, and acylating the latter with trans-1-methyl-4-propyl-L-2-pyrrolidinecarboxylic acid. By substituting other aldehydes and/or other 1-thio-α-D-galactopyranosides, analogs of lincomycin are obtained.

3,681,325
DE(N-METHYL)-N-SUBSTITUTED DERIVATIVES OF ERYTHROMYCIN

Leslie Alan Freiberg, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Sept. 30, 1970, Ser. No. 77,051
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 E 8 Claims

New derivatives of erythromycin A and B, having antimicrobial activity of the formula



wherein Z is benzyl; halo, nitro, amino, loweralkyl, loweralkoxy, carboxybenzyl, halologweralkyl, diloweralkylaminomethyl, carboxyl, loweralkoxymethyl, cyano and hydrocarbylene substituted benzyl; allyl, loweralkyl and phenylsubstituted β and γ allyl, e.g., crotyl; cyano; and cyanoloweralkyl; and ery is the cladinose and erythronolide moieties of erythromycin.

3,681,326
9-SUBSTITUTED ERYTHROMYCIN A AND B OXIMES

Anne Mary Von Esch, North Chicago, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Jan. 11, 1971, Ser. No. 105,664
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 E 5 Claims

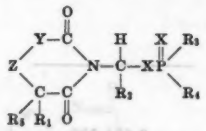
Novel 9-lower alkyl, phenyl, and benzyl substituted erythromycin A and B oximes have been found to have antibiotic activity.

3,681,327
N-METHYLENETHIOPHOSPHATE DERIVATIVES OF 1,3-THIAZINES AND 1,4-THIAZANES

Neil F. Newman, Matawan, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed July 1, 1970, Ser. No. 51,687
Int. Cl. C07d *93/06, 93/10*
U.S. Cl. 260—243 R 5 Claims

N-methylenethiophosphates of six-membered ring cyclic imides have been prepared which show marked insecticidal activity. These compounds can be characterized by the following structural formula:



wherein R_1 and R_5 are selected from hydrogen, C_1 to C_{16} alkyl, C_6 to C_{10} aryl optionally substituted with chloro, bromo, nitro, or C_1 to C_4 alkyl; halo-substituted C_1 to C_{16} alkyl, C_1 to C_6 alkoxy, C_2 to C_6 alkenyl, C_2 to C_6 alkynyl, C_1 to C_4 alkysulfoxide, nitrile, C_1 to C_4 alkylamino, C_6 to C_{10} aryloxy, C_1 to C_4 carboalkoxy, C_2 to C_4 dialkylamino, nitro, C_2 to C_6 alkoxyalkyl, C_2 to C_6 alkylthioalkyl, bromo, chloro, C_1 to C_6 alkylthio and C_1 to C_6 alkylsulfonyl; R_2 is hydrogen, C_1 to C_4 alkyl optionally substituted with chloro or bromo, R_3 and R_4 can be the same or different and are C_1 to C_6 alkyl, C_1 to C_6 alkoxy, C_6 to C_{10} aryloxy, C_1 to C_6 alkylthio, C_1 to C_6 haloalkyl, C_6 to C_{10} aryl, C_6 to C_{10} halo-substituted aryl, C_7 to C_{11} arylalkyl, C_6 to C_{10} arylthio, and C_7 to C_{11} halo-substituted arylalkyl; X is either O or S; Y is either O or S or

and Z is either O, S, or

with the proviso that when Y is O or S, Z must be

and when Z is O or S, Y must be

3,681,328
SYDNONE DERIVATIVES OF 7-AMINO-CEPHALOSPORANIC ACIDS

Masaru Kurita, Tondacho, Yoshihisa Saito, Suita, and Tsutomu Teraji, Nishikinya, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

No Drawing. Filed June 27, 1967, Ser. No. 649,113
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 7 Claims

The disclosure teaches novel 3- and/or 4-substituted sydnone derivatives of 7 - aminocephalosporanic acids which are useful as an antibacterial agent in the treatment of the infectious diseases by Gram-negative and Gram-positive organisms.

3,681,329
PROCESS FOR THE PREPARATION OF CYCLIC IMINOETHERS
Morton H. Litt, Cleveland, Ohio; Richard B. Lund, Toms River; John Vitrone, Parsippany, both of N.J., and Jack L. Herz, Scarsdale, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 655,291, July 24, 1967. This application May 4, 1970, Ser. No. 34,566
Int. Cl. C07d *85/36, 87/14*
U.S. Cl. 260—244 R 7 Claims

The liquid phase thermally induced cyclodehydration of N-(ω-hydroxyalkyl) alkyl and aryl carboxylamides to afford cyclic iminoethers is catalyzed by compounds of manganese, cobalt, molybdenum, tungsten and the rate earth metals.

3,681,330
2,3-DIHYDRO-1,4-BENZOXAZINES
Marcel Pesson, Paris, France, assignor to Societe anonyme dite: Laboratoire Roger Bellon, Neuilly-sur-Seine (Hauts de Seine), France
Filed June 4, 1968, Ser. No. 734,223
Claims priority, application Great Britain, June 6, 1967, 25,999/67
Int. Cl. C07d *87/48*
U.S. Cl. 260—244 R 37 Claims

The invention provides 3-oxo-2,3-dihydro-1,4-benzoxanines carrying a carbamoylakyl radical in the 4-position which have useful therapeutic properties as muscle relaxing agents, analgesics, anti-convulsion agents, anti-inflammatories, and anti-pyretics.

3,681,331
1-HYDROXY-6-AMINO ALKOXY-PHENAZINE 5,10-DIOXIDES
Willy Leimgruber, Montclair, and Manfred Weigele, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed April 2, 1970, Ser. No. 25,298
Int. Cl. C07d *87/40*
U.S. Cl. 260—247.5 R 9 Claims

6-Substituted derivatives of 1-phenazinol 5,10-dioxide which possess broad spectrum anti-microbial activity are disclosed.

3,681,332
DIHALO-S-TRIAZINE COMPOUNDS
Jiban Kumar Chakrabarti, Camberley, and Alec Todd, Wokingham, both of England, assignors to Lilly Industries Limited, London, England
Filed April 13, 1971, Ser. No. 133,702
Int. Cl. C07d *55/48*
U.S. Cl. 260—248 CS 6 Claims

2-(Heteroaryl substituted)-4,6-di-halo-s-triazines are useful as pesticides, being active in controlling fungi, bacteria, viruses and insects which attack plants, and may be prepared by halogenation of the corresponding 4,6-dioxo compounds or by reaction of a cyanuric halide with a heteroaromatic compound.

3,681,333
PROCESS FOR THE PREPARATION OF CYCLIC IMINOETHERS
Morton H. Litt, Morristown; Richard B. Lund, Toms River; John Vitrone, Parsippany, all of N.J.; Jack L. Herz, East Syracuse, N.Y., and Francis C. O'Donnell, Wharton, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed July 24, 1967, Ser. No. 655,291
Int. Cl. C07d *87/14, 85/36*
U.S. Cl. 260—244 R 10 Claims

The liquid phase thermally induced cyclodehydration of N-(ω-hydroxyalkyl) alkyl and aryl carboxylamides to afford cyclic iminoethers is catalyzed by compounds of manganese, cobalt, molybdenum, tungsten and the rare earth metals.

3,681,334
PHOSPHORIC (-PHOSPHONIC) AND THIONO-PHOSPHORIC (-PHOSPHONIC) ACID ESTERS
Karl-Julius Schmidt, Wuppertal-Vohwinkel; Ingeborg Hammann, Cologne, and Gunter Unterstenhofer, Opladen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation-in-part of Ser. No. 744,331, July 12, 1968, Pat. No. 3,510,484. This application Feb. 18, 1970, Ser. No. 12,441The portion of the term of this patent subsequent to May 5, 1987, has been disclaimed.
Int. Cl. C07d *55/10*
U.S. Cl. 260—248 AS 2 Claims

(Alkyl, phenyl and O-alkyl)-O,-alkyl-O-(benzo-1,2,4-triazin-3-yl)-phosphoric and phosphonic and thiono-(phosphoric and phosphonic)-acid esters which possess anthropodicidal, especially acaricidal and insecticidal, properties and which may be produced by reacting the corresponding phosphoric (phosphonic) and thiono-phosphoric (-phosphonic) acid ester halide with 3-hydroxy-benzo-1,2,4-triazine.

3,681,335
SUPPRESSION OF TRIS(ALKYLAMINO)-S-TRIAZINE FORMATION IN THE PRODUCTION OF CHLORO-BIS(ALKYLAMINO)-S-T RIAZINES THROUGH ADJUSTMENT OF PH
George A. Saul, and Robert J. Eckert, Jr., both of Mobile, Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Dec. 30, 1970, Ser. No. 102,737
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.8 8 Claims

The known commercial method of producing herbicidal chloro-bis(alkylamino)-s-triazines involves the use of cyanuric chloride as a starting material and the step-wise replacement of two chlorine atoms therefrom with alkylamino groups. One of the by-products obtained is a tris(alkylamino)-s-triazine, which is formed by replacement of the third chlorine atom in cyanuric chloride. A method for suppressing the formation of tris(alkylamino)-s-triazines comprises the steps of (1) lowering the pH of the reaction mixture to about 5.0 to 9.0 immediately after the chlorobis(alkylamino)-s-triazine reaction is complete, thus solublizing and rendering inactive any excess alkylamine reactant, and optionally (2) restoring the pH to about 11.0 to 12.5 immediately prior to recovery of the product in order to facilitate its filtration and separation.

3,681,336
N-(3-PHENYL-2H-TETRAZOLE)-ALKANOYL AMINES
Robert Thomas Buckler, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Dec. 24, 1969, Ser. No. 888,068
Int. Cl. C07d *87/40*
U.S. Cl. 260—247.5 R 8 Claims

A series of amide derivatives of omega-5-aryl-2-tetrazolyl-alkanoic acids derived from cyclic amines. These compounds are useful as anti-inflammatory agents.

3,681,337

SUPPRESSION OF TRIS(ALKYLAMINO)-S-TRIAZINE FORMATION IN THE PRODUCTION OF CHLORO-BIS (ALKYLAMINO)-S-TRIAZINES THROUGH THE USE OF ADDITIONAL CYANURIC CHLORIDE

Harris E. Petree, Spanish Fort, Ala., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,249
Int. Cl. C07d 55/20
U.S. Cl. 260—249.8 7 Claims

The known commercial method of producing herbicidal chloro-bis(alkylamino)-s-triazines involves the use of cyanuric chloride as a starting material and the step-wise replacement of two chlorine atoms therefrom with alkylamino groups. One of the by-products obtained is a tris(alkylamino)-s-triazine, which is formed by replacement of the third chlorine atom in cyanuric chloride. A method for suppressing the formation of tris(alkylamino)-s-triazines comprises the steps of (1) adding additional cyanuric chloride to the reaction mixture immediately after the chloro-bis(alkylamino)-s-triazine reaction is complete, thus forming a dichloro-alkylamino-s-triazine, (2) hydrolyzing the dichloro-alkylamino-s-triazine and the unreacted cyanuric chloride, and (3) removing of the hydrolyzed by-products by filtration.

3,681,338

C-21 LOWER ALKYSULFINYL ESTERS OF CERTAIN 6α-FLUORO-21-HYDROXYCORTICOSTEROIDS

Richard M. Scribner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed April 22, 1970, Ser. No. 31,005
Int. Cl. C07c 173/00
U.S. Cl. 260—239.55 D 12 Claims

C-21 Lower alkylsulfinyl esters of certain 6α-fluoro-21-hydroxycorticosteroids are good antiinflammatory agents which have both topical and systemic activities. These compounds are best prepared by a two-step process which involves the esterification of a 21-hydroxycorticosteroid with a lower alkylsulfide-acid and oxidation of the resulting sulfide ester with a mild oxidizing agent to the corresponding sulfinyl ester.

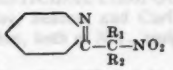
3,681,339

NITROALKYL HEXAHYDROAZEPINES USEFUL AS INSECTICIDES

Marvin T. Tetenbaum, Convent, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed July 28, 1970, Ser. No. 59,785
Int. Cl. C07d 41/08
U.S. Cl. 260—239 BE 3 Claims

Novel compounds having the formula



wherein R_1 and R_2 are H or alkyl radicals of one to five carbon atoms, with the proviso that the total number of carbon atoms in R_1 plus R_2 ranges from one to five. Said compounds are useful as insecticides.

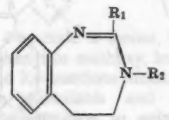
3,681,340

1,3-BENZODIAZEPINES

Herman Robert Rodriguez, 201 E. 21st Apt. 20 D, New York, N.Y., and George De Stevens, 2 Warwick Road, Woolard Park, Summit, N.J.

Continuation-in-part of Ser. No. 649,828, June 29, 1967, abandoned, which is a continuation-in-part of Ser. No. 630,520, April 13, 1967, abandoned. This application Feb. 12, 1968, Ser. No. 704,517
Int. Cl. C07d 53/04, 57/00, 99/04
U.S. Cl. 260—239 BD 4 Claims

4,5-Dihydro-3H-1,3-benzodiazepines, e.g., those of the formula



R_1=H, free or etherified OH or SH, amino, or an aliphatic, araliphatic or aromatic radical
R_2=H, acyl or aliphatic, araliphatic or aromatic radical

N-oxides, quaternaries and salts thereof exhibit central nervous system depressing and coronary dilatating effects.

3,681,341

PROCESS FOR PREPARING 1-LOWER ALKYL-1,4-BENZODIAZEPIN-2-ONES

James Valentine Earley, Cedar Grove; Rodney Ian Fryer, North Caldwell; Robert Ye-Fong Ning, West Caldwell, and Leo Henryk Sternbach, Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 23, 1970, Ser. No. 101,188
Int. Cl. C07d 53/06
U.S. Cl. 260—239.3 D 1 Claim

A process for preparing 1-lower alkyl substituted 1,4-benzodiazepin-2-ones via the rearrangement of the corresponding imino ether is disclosed. The products obtainable by this process are known compounds and are useful as sedatives, anticonvulsants and muscle relaxants.

3,681,342

ESTERS OF -CARBOXYBENZYLPENICILLIN

Kenneth Butler, Old Lyme, and Ernest Seiichi Hamanaka, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 880,395, Nov. 26, 1969, abandoned. This application Nov. 12, 1970, Ser. No. 89,137
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 11 Claims

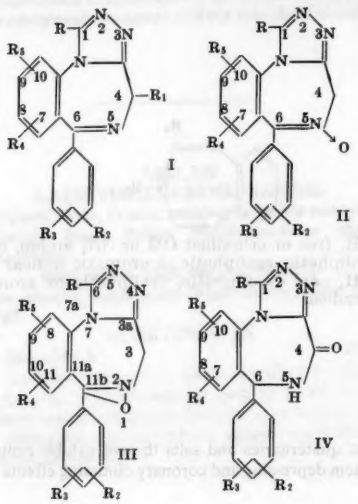
Mono- and diesters of α-carboxybenzylpenicillin, a novel class of chemotherapeutic agents.

3,681,343
6-PHENYL-S-TRIAZOLO[4,3-A][1,4] BENZODIAZEPINES

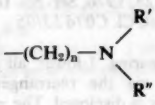
Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed May 11, 1971, Ser. No. 142,418
Int. Cl. C07d 53/06
U.S. Cl. 260—239.3 T 6 Claims

This invention relates to novel 6-phenyl-s-triazolo [4,3-a] [1,4]benzodiazepines embraced by the formulae



wherein R is selected from the group consisting of hydrogen, lower alkyl of one through three carbon atoms, phenyl, benzyl, nitromethyl, cyanomethyl, lower alkoxymethyl having an alkoxy moiety of one through three carbon atoms



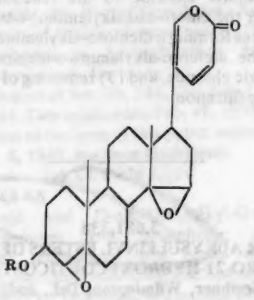
in which *n* is an integer of 1 through 2, R′ and R″ are each selected from the group consisting of hydrogen and alkyl of one through three carbon atoms and when combined is an alkylidene bridge of four through five carbon atoms; R_1 is selected from the group consisting of hydroxy and lower acyloxy; R_2, R_3, R_4 and R_5 are selected from the group consisting of hydrogen, lower alkyl of one through three carbon atoms, halogen, nitro, cyano, trifluoromethyl, lower alkoxy, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, amino, lower alkanoylamino and lower dialkylamino; and a pharmacologically acceptable acid addition sat thereof. It also relates to novel processes for the preparation of the aforesaid compounds. The new products of Formulas I, II, III and IV are useful as sedatives, hypnotics, tranquilizers, muscle relaxants and anticonvulsants. Also, as feed additives for increasing growth rate and feed efficiency of livestock.

3,681,344
CERTAIN CARDIOACTIVE OXIDO-BUFADIENOLIDES

Kurt Radscheit, Kelkheim/Taunus; Ulrich Stache; Werner Haede, both of Hofheim/Taunus; Werner Fritsch, Neuenhain/Taunus, and Ernst Lindner, Frankfurt/Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Dec. 2, 1969, Ser. No. 881,581
Claims priority, application Germany, Dec. 5, 1968, P 18 12 945.8
Int. Cl. C07c 173/04
U.S. Cl. 260—239.57 2 Claims

Cardioactive oxido-bufadienolides of the formula



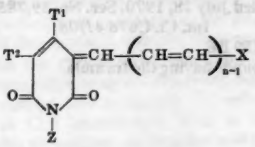
wherein R is hydrogen or lower acyl. Methods of making such compounds.

3,681,345
DYESTUFFS AND PHOTOGRAPHIC PROCESS

Stephen William Bland, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed March 9, 1970, Ser. No. 17,981
Claims priority, application Great Britain, March 14, 1969, 13,577/69; May 22, 1969, 26,210/69; July 8, 1969, 34,416/69
Int. Cl. C07d 99/02
U.S. Cl. 260—240.2 2 Claims

Methine dyes of the formula:



wherein X is $-E^1$ or $-CH = E^2$, E^1 being the residue of an compound containing a reactive methylene group, and E^2 the residue of a 5- or 6-membered nitrogen containing heterocyclic ring; *n* is 1, 2 or 3, Z is hydrogen, or an optionally substituted amino or hydrocarbon radical; and T^1 and T^2 are each independently hydrogen, cyano, carbonamido, acyl or an optionally substituted hydrocarbon radical; and the use of the said dyestuffs for coloring textile materials or in photographic materials.

3,681,346

α-ISOMER OF THE DECANOIC ACID ESTER OF 10-[3,-(4-HYDROXYETHYL-1-PIPERAZINYL)PROPYLIDENE]-2-TRIFLUORO-METHYL THIAXANTHENE, ACID ADDITION SALTS THEREOF, METHOD OF USE AND COMPOSITIONS

Povl Viggo Petersen, Virum, and Thorkil Ammitzboll, Greve Strand, both of Denmark, assignors to Kefalas A/S, Copenhagen-Valby, Denmark

Filed June 20, 1969, Ser. No. 835,250
Int. Cl. C07d 51/70
U.S. Cl. 260—240 TC 7 Claims

The present invention is concerned with the α-isomer of the decanoic acid ester of 10-[3-(4-hydroxyethyl-1-piperazinyl)propylidene]-2-trifluoroemethyl thiaxanthene, the nontoxic acid addition salts thereof, methods of preparing the same, therapeutic compositions thereof having prolonged effect, and a method of treating psychotic patients therewith.

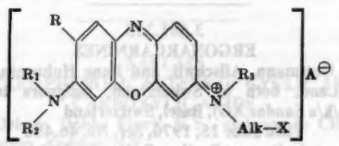
3,681,347

BASIC OXAZINE DYESTUFFS

Luis Herz; Reinhard Mohr, both of Offenbach, Main; Eberhard Mundlos, Heusenstamm, and Johann Ostermeier, Rembrucken, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Main, Germany

Filed April 15, 1970, Ser. No. 28,965
Claims priority, application Germany, April 17, 1969, P 19 19 511.0
Int. Cl. C07d 87/50
U.S. Cl. 260—242 6 Claims

Basic oxazine dyestuffs having the formula



(I)

wherein R represents an alkyl group, R_1, R_2 and R_3 each represent an alkyl group which may contain further substituents and R_1 and R_2 taken with one another and together with the nitrogen atom to which they are attached may form a heterocyclic ring, Alk represents an alkylene radical, X stands for a halogen atom or a cyano, trifluoromethyl, acyl or carboxylic acid ester group, or a carboxylic acid amide group which may be substituted, or an alkylsulfone or arylsulfone group, or a sulfonic acid amide group which may be substituted, or an acyloxy, acylamino, sulfonylamino, carbamic acid ester urea, or dicarboximido group, and A^- represents an anion.

3,681,348

OIL-SOLUBILIZING NITROGEN-CONTAINING PESTICIDAL COMPOUNDS

Frederic C. McCoy, Beacon, and Carl Loyal W. Swanson, Hopewell Junction, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 20, 1969, Ser. No. 878,586
Int. Cl. C07d 55/20; C07c 69/00; C07d 27/54
U.S. Cl. 260—249.8 14 Claims

This invention concerns a process for converting oil-insoluble substances, particularly pesticides, having at least one nonbasic nitrogen-containing functional group, which are normally insoluble in petroleum oil, to soluble complexes by treatment with alkylated phenols, and the oil-soluble complexes resulting therein.

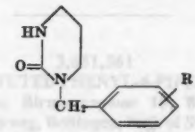
3,681,349

1-(SUBSTITUTED BENZYL) TETRAHYDRO-2-(1H) PYRIMIDONES

Thomas J. Schwan; Stanley E. Burrous, both of Norwich, and James L. Butterfield, New Berlin, all of N.Y., assignors to Morton-Norwich Products, Inc.

Filed March 5, 1970, Ser. No. 16,982
Int. Cl. C07d 51/38
U.S. Cl. 260—251 R 13 Claims

Novel 1-(substituted benzyl)tetrahydro-2-(1H)pyrimidones of the formula:



where R in the 4-position is amino, hydrogen, acetylamino, halo, hydroxy, phenyl or methoxy; in the 3 position nitro or fluoro; and in the 3,4-positions dichloro are useful as central nervous system stimulants and mydriatics upon intraperitoneal administration to animals in doses of from 50–100 mg./kg.

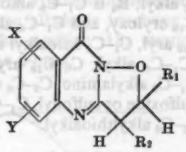
3,681,350

2,3-DIHYCRO-9H ISOXAZALA ⅓3,2-B¼QUINAZOLIN-9-ONES

David B. Reisner, Hightstown; Bernard J. Ludwig, North Brunswick, and Frank M. Berger, Princeton, all of N.J., assignors to Carter-Wallace, Inc., New York, N.Y.

Filed Oct. 8, 1970, Ser. No. 79,311
Int. Cl. C07d 51/48
U.S. Cl. 260—251 A 19 Claims

Chemical compounds of the formula:



in which X and Y, which may be the same or different, each represent a member selected from the group consisting of hydrogen, hydroxy, halogen, lower alkyl, lower alkoxy or sulfonamido and R_1 and R_2, which may be the same or different, represent hydrogen or lower alkyl. Said compounds have valuable anti-inflammatory and antipyretic as well as diuretic activity in warm-blooded animals.

3,681,351

CERTAIN 5,6,7,8-TETRAHYDRO-5,8-ETHANO-PYRIDINO[2,3-B]d-THIENO[5,4-D]PYRIMIDINES

Ian Wellings, 1713 Shadybrook Rd., Wilmington, Del.

Filed April 15, 1970, Ser. No. 28,959
Int. Cl. C07d 51/42
U.S. Cl. 260—256.5 R 3 Claims

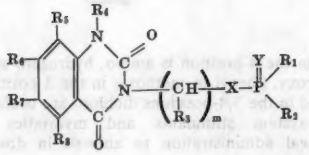
This invention relates to a novel class of ethanopyridinothienopyrimidines which possess antiviral activity against viruses having a core of double stranded D.N.A. Specifically, the compounds of the invention exhibit antiviral activity against Herpes simplex/H4 virus, Herpes simplex/2 Ala./SM virus, pseudorabies virus, vaccinia virus, vesicular stomatis and adenovirus based on experimental data in warm-blooded animals and birds, (animals possessing the homeostatic mechanism).

3,681,352
URACIL PHOSPHATES CONTAINING AN AROMATIC FUSED RING

Daniel D. Rosenfeld, East Brunswick, and Martin L. Gorbaty, Elizabeth, both of N.J., assignors to Esso Research and Engineering Company

Filed April 22, 1970, Ser. No. 31,008
Int. Cl. C07d 51/30
U.S. Cl. 260—260 9 Claims

Uracil phosphates containing a fused aromatic ring have been shown to possess insecticidal activity. The structures of these compounds can be characterized as follows:



wherein R_5, R_6, R_7 and R_8 can be the same or different and can equal hydrogen, C_1–C_6 alkyl, C_6–C_{10} aryl, halogen, cyano, thiocyano, nitro, C_2–C_6 carboalkoxy, C_1–C_6 haloalkyl, C_2–C_6 acyl, C_1–C_6 alkylsulfoxide and sulfone, C_1–C_6 thioalkyl, C_1C_6 alkoxy, C_1–C_6 alkylamino and C_2–C_6 dialkylamino, C_1–C_6 sulfonamido and carboxylic acid; X is O or S; Y is O or S; *m* is 1 or 2; R_1 is C_1–C_6 alkoxy, C_1–C_6 thioalkyl, C_6–C_{10} aryl, C_6–C_{10} aryloxy and C_1–C_6 alkyl; R_2 is C_1–C_6 alkoxy, C_1–C_6 thioalkyl, C_6–C_{10} aryl, C_6–C_{10} aryloxy, and C_1–C_6 alkyl; R_3 is hydrogen, C_1–C_6 alkyl, C_6–C_{10} aryl, C_1–C_6 haloalkyl and C_6–C_{10} haloaryl; R_4 is hydrogen, C_1–C_6 alkyl, C_6–C_{10} aryl, C_1–C_6 haloalkyl, C_6–C_{10} haloaryl, C_1–C_6 alkylamino, C_2–C_6 dialkylamino, C_2–C_6 acyl, C_1–C_6 alkylsulfoxide or sulfonyl, C_1–C_6 alkoxy, C_2–C_6 alkyloxyalkyl and C_2–C_6 alkylthioalkyl.

3,681,353
CHARGE-TRANSFER COMPLEXES OF FLUORO-AND CYANO-SUBSTITUTED TETRACYANQUINODIMETHANS

Elmore Louis Martin, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 664,315, Aug. 30, 1967, Pat. No. 3,558,671, which is a continuation-in-part of Ser. No. 514,385, Dec. 16, 1965, Pat. No. 3,504,001. This application Nov. 25, 1970, Ser. No. 92,952
Int. Cl. C07d 51/80, 33/50
U.S. Cl. 260—267 16 Claims

Charge-transfer compounds of the formula

$$M^{n+}(STCNQ^{\cdot})_n(STCNQ^{\circ})_b$$

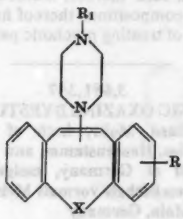
wherein M is a cation of valance *n*+ when *n* is from 1 to 6, STCNQ is a tetracyanoquinolium substituted in the ring with at least two substitutents which can be fluorine or cyano, $^-$ denotes a negative charge, $^{\cdot}$ denotes an unpaired electron, $^{\circ}$ indicates a neutral species, and *b* is a number from 0 to 3 including fractions, are useful as pigments in lacquers and for dying nylon, wool and silk.

3,681,354
DIBENZO(B,F)OXEPIN-AND THIEPIN-10-YL COMPOUNDS

Michele Mastursi, Naples; Sabino Lembo, Pozzuoli, and Rene Viterbo, Naples, all of Italy, assignors to Richardson-Merrell S.p.A., Naples, Italy

Continuation-in-part of Ser. No. 715,535, March 25, 1968, Pat. No. 3,600,391. This application Nov. 17, 1970, Ser. No. 90,488
Claims priority, application Italy, March 28, 1967, 35729 A/67
Int. Cl. C08d 51/70
U.S. Cl. 260—268 TR 12 Claims

New compounds having the following general formula:



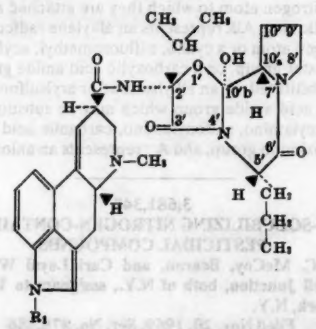
in which X is = O, or = S; and R, and R_1 are a variety of substitutents. The compounds have useful pharmacological activities which include hypertensive, sedative, muscle relaxant, local anesthetic, analgesic, anti-pyretic, and anti-inflammatory activities. Various salts of these compounds are also useful and are included within the scope of the present invention. Processes of preparing these compounds are described.

3,681,355
ERGONARCARNINES

Stephen Guttmann, Allschwil, and Rene Huhuenin, Reinach Basel-Land, both of Switzerland, assignors to Sandoz Ltd.(a/k/a Sandoz AG), Basel, Switzerland

Filed June 15, 1970, Ser. No. 46,480
Claims priority, application Switzerland, June 20, 1969, 9462/69
Int. Cl. C07d 43/20
U.S. Cl. 260—268 PE 2 Claims

The invention concerns novel compounds of the formula:



wherein R_1 is hydrogen or methyl.

The one compound, ergonorcornine, is useful in inhibiting lactation, and the other compound, 1-methyl-ergonorcornine, is useful in stimulating lactation.

Processes for the production of the said compounds are also disclosed.

3,681,356

1,4-BIS-(CYCLOALKYLTHIO)PIPERAZINES

Aubert Y. Coran; Joseph E. Kerwood, and Chester D. Trivette, Jr., all of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 518,987, Jan. 6, 1966, Pat. No. 3,513,139. This application March 9, 1970, Ser. No. 17,971

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 S 2 Claims

Bis(cycloalkylthio)piperazines are prepared which are excellent inhibitors of premature-vulcanization.

3,681,357

2-CHLORO-11-(PIPERAZINYL)DIBENZ[B,F][1,4]OXAZEPINE AND ACID ADDITION SALTS THEREOF

Charles Frederick Howell, Upper Saddle River; Robert Allis Hardy, Jr., Ridgewood, both of N.J., and Nicanor Quinones Quinones, New York, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 551,544, May 20, 1966, abandoned, which is a continuation-in-part of Ser. No. 348,271, Feb. 28, 1964, abandoned. This application April 6, 1970, Ser. No. 26,115

Int. Cl. C07d *51/70*; A61u *27/00*

U.S. Cl. 260—268 TR 8 Claims

The preparation of 2-chloro-11-(1-piperazinyl)dibenz-[b,f][1,4]oxazepine by heating ethyl 4- [o-(p-chlorophenoxy)-phenyl]carbamoyl -1-piperazinecarboxylate with phosphorus pentoxide and phosphorus oxychloride, is described. The base compound and non-toxic acid addition salts are useful for their desirable effect on the central nervous system of warm-blooded animals.

3,681,358

HINDERED PHENOLIC ESTERS OF CYCLIC AMINO CARBOXYLIC ACIDS

Eduard Kleiner, Dobbs Ferry, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

This application Dec. 9, 1968, Ser. No. 782,486

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 4 Claims

Organic materials, particularly synthetic polymers such as polypropylene are protected against oxidation in air, thermal degradation or deterioration by including, in such substances, a stabilizing amount of antioxidant. The antioxidant is obtained by reacting (a) an α,β-unsaturated ester of a hindered hydroquinone and (b) a heterocyclic secondary amine.

3,681,359

2-ARYLOXYALKYLPIPERAZINE DERIVATIVES

Thomas Leigh, and Alexander Henry Todd, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 7, 1969, Ser. No. 797,673

Claims priority, application Great Britain, Feb. 23, 1968, 8,918/68

Int. Cl. C07d *51/66*

U.S. Cl. 260—268 BC 21 Claims

The disclosure relates to 2-aryloxymethylpiperazine derivatives, processes for their manufacture, pharmaceutical compositions containing them and a method for using them to produce a thymoleptic effect or a central nervous depressant effect in warm-blooded animals. Representative of the compounds disclosed is 2-phenoxymethylpiperazine.

3,681,360

ANTIVIRAL SUBSTITUTED ACRIDANONES

Rodyen Ian Fryer, and Emenuel Grunberg, both of North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed April 9, 1971, Ser. No. 132,819

Int. Cl. C07d *37/20*

U.S. Cl. 260—279 R 6 Claims

10 alkyl carbonylic substituted acridanones and a method for their preparation. The compounds are chemotherapeutically useful as antiviral agents.

3,681,361

DISUBSTITUTED PHENYL-4-PIPERIDONES

Adolf Lindenmann, Birmannagasse 19, Basel, and Rudolf Suess, Funfeichenweg, Bettingen, both of Switzerland

Division of Ser. No. 660,910, Aug. 16, 1967, Pat. No. 3,574,215. This application May 25, 1970, Ser. No. 48,679

Int. Cl. C07d *29/20*

U.S. Cl. 260—293.8 2 Claims

3-(3,4-disubstituted-phenyl)-4-piperidones useful as intermediates for the synthesis of a variety of organic compounds, especially pharmaceuticals.

3,681,362

PROCESS FOR THE PREPARATION OF ISOQUINUCLIDINE ALKALOIDS

Wataru Nagata, Nishinomiya-shi, and Shoichi Hirai, Ibaraki-shi, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed June 6, 1969, Ser. No. 832,878

Claims priority, application Japan, June 29, 1968, 43/45279

Int. Cl. C07d *43/38*

U.S. Cl. 260—293.53 5 Claims

A process for totally synthesizing isoquinuclidine alkaloids, particularly the iboga alkaloids involving a carboxylic acid ester residue at the position 18, starting from 2-indole acetylisoquinuclidine-6-ones.

3,681,363

SPIRO(IMIDAZOLIDINE-4,3'-QUINUCLIDINE)-2,5-DIONES

Samuel Elkin, Philadelphia, and Hillel Lieberman, Andalusia, both of Pa., assignors to Temple University, Philadelphia, Pa.

Filed Aug. 20, 1970, Ser. No. 65,733

Int. Cl. C07d *39/06*

U.S. Cl. 260—293.53 3 Claims

Spiro(imidazolidine-4,3'-quinuclidine)-2,5-dione and the 1-methyl homolog thereof have been prepared and found useful as anti-convulsant agents.

3,681,364

ALKYLHYDROXYPHENYL POLYAMIDES

Martin Dexter, Briarcliff Manor; John Demon Spivack, Spring Valley, and David Herbert Steinberg, Bronx, all of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 694,370, Dec. 29, 1970, Pat. No. 3,584,047. This application June 5, 1970, Ser. No. 57,398

Int. Cl. C07d *29/30*

U.S. Cl. 260—293.64 2 Claims

Polyamides of alkylhydroxyphenylalkanoic acids and polyamines prepared by amidation procedures, are stabilizers of organic material otherwise subject to oxidative deterioration.

3,681,365
DERIVATIVES OF ACETIC ACID

Rudolf G. Griot, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed Oct. 18, 1968, Ser. No. 768,881 The portion of the term of this patent subsequent to Dec. 8, 1987, has been disclaimed.
Int. Cl. C07d *29/24*
U.S. Cl. 260—293.82 3 Claims

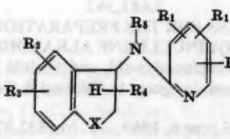
This disclosure relates to derivatives of acetic acid, e.g., (p-biphenylyloxy)-(p-chlorophenoxy)acetic acid methyl ester. These compounds are useful as hypocholesteremics/hypolipemics.

3,681,366
INDANYL OR TETRALYL AMINO SUBSTITUTED AMINOPYRIDINES

Walter V. Bebenburg, and Kurt Thiele, both of Frankfurt/Main, Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany

Filed April 17, 1970, Ser. No. 29,655
Claims priority, application Austria, April 22, 1969, A 3889/69
Int. Cl. C07d *31/36*
U.S. Cl. 260—295.5 B 9 Claims

Compounds are prepared having the formula



where the R_1 groups are the same or different, at least one R_1 group is amino or lower alkyl-amino or acylated amino as given below and the other R_1 groups are hydrogen, amino, lower alkyl substituted amino, amino acylated with saturated or unsaturated carboxylic acids or with carbonic acid monoesters, or possibly alkylated carbonic acid semiamide or possibly alkylated carbonic acid semihydrazide, or carbonic acid semi morpholide, or carbonic acid semi piperidide, R_2 and R_3 are the same or different and are hydrogen, halogen, lower alkyl, lower haloalkyl, lower alkoxy, lower acyloxy, hydroxy, mercapto, lower alkyl thio, lower acyl thio, nitro, carboxy, lower carbalkoxy, possibly lower alkyl substituted carbamoyl, lower alkyl amino, amino or amino or lower alkylamino acylated as in R_1, R_4 is hydrogen, lower alkyl or phenyl, R_5 is hydrogen, lower saturated alkyl, phenalkyl or acyl as defined for R_1, X is oxygen, methylene, ethylene or oxymethylene, their optically active or diastereometric forms, salts and quaternary compounds. The compounds have antiphlogistic and analgesic activity.

3,681,367
CERTAIN PYRIDYLALKYL DERIVATIVES OF 2-AMINO-5-PHENYL-2-OXAZOLIN-4-ONES

Cheuk Man Lee, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Sept. 25, 1970, Ser. No. 75,679
Int. Cl. C07d *31/44*
U.S. Cl. 260—295 AM 11 Claims

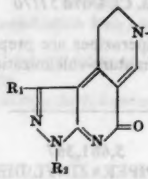
2-Pyridylalkylamino-5-phenyl-2-oxazolin-4-ones with optional simple substituents in the phenyl ring or in the connecting alkylamino bridge between the two heterocyclic rings were found to be valuable anti-depressants when administered orally to warm-blooded animals.

3,681,368
PYRAZOLO NAPHTHRIDINES

Martin Winn, Deerfield, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 15, 1970, Ser. No. 81,121
Int. Cl. C07d *39/10*
U.S. Cl. 260—295 T 7 Claims

Covers pyrazolo naphthyridines having the formula:



wherein R_1 is hydrogen or lower alkyl, R_2 is hydrogen, lower alkyl, phenyl or cyclohexyl and R_3 is phenyl, benzyl or halo benzyl. Compounds exhibit anti-inflammatory and other properties.

3,681,369
2,6-BIS (TRIFLUOROMETHYL)-1H-IMIDAZO[4,5-B PYRIDINE

George O. P. Doherty, RFD 6, Box 357, Greenfield, Ind.

Filed April 20, 1970, Ser. No. 30,230
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 H 1 Claim

2,6-Bis(trifluoromethyl)-1H-imidazo(4,5-b)pyridine, useful as a herbicide.

3,681,370
CERTAIN ACYLOXY THIAZOLIDINES AND PROCESS FOR THEIR MANUFACTURE

Robert Burns Woodward, 12 Oxford St., Cambridge, Mass.

Division of Ser. No. 573,891, Aug. 22, 1966, Pat. No. 3,522,266. This application Nov. 24, 1969, Ser. No. 879,616
Claims priority, application Switzerland, Sept. 10, 1965, 12623/65; Dec. 9, 1965, 16970/65; Dec. 9, 1965, 16972/65; Jan. 13, 1966, 447/66; Feb. 3, 1966, 1529/66
Int. Cl. C07d *91/16*
U.S. Cl. 260—306.7 10 Claims

Process which comprises treating a saturated cyclic α-hydrazino-thioether, in which the hydrazino group is N,N'-disubstituted by esterified carboxyl groups, with an oxidation reagent capable of furnishing an acyloxy group; in a resulting saturated cyclic α-acyloxy-thioether the acyloxy group may be converted into the hydroxyl group. The products are useful in the synthesis of 7-amino-cephalosporanic acids.

3,681,371
PROCESS FOR PURIFICATION OF CRUDE 2-MERCAPTOBENZOTHIAZOLE

Seiji Sagawa; Haruo Kunihiro; Osamu Kimura, and Masatoshi Inoue, all of Osaka, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed May 7, 1970, Ser. No. 35,546
Claims priority, application Japan, May 8, 1969, 44/36050
Int. Cl. C07d *91/48*
U.S. Cl. 260—306 28 Claims

A process for purifying crude 2-mercaptobenzothiazole, obtained by the reaction of aniline, sulfur and carbon disulfide, which comprises vaporizing the crude 2-mercaptobenzothiazole to remove non-volatile impurities, and if desired, dissolving the condensate in an aqueous alkali solution to remove the insolubles, and/or subjecting the resulting alkali solution to extraction with an aromatic hydrocarbon, thereby to obtain pure 2-mercaptobenzothiazole. 2-Mercaptobenzothiazole is useful as an intermediate for the production of rubber vulcanization accelerators.

3,681,372
BIS-ISOXAZOLE COMPOUNDS AND THEIR QUATERNARY SALTS
Donald M. Burness, and Jerome J. Looker, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 647,324, June 20, 1967, abandoned, Continuation-in-part of Ser. No. 486,189, Sept. 9, 1965, abandoned. This application July 10, 1968, Ser. No. 750,707
Int. Cl. C07d *85/22*
U.S. Cl. 260—307 H 4 Claims

Bis-isoxazoles and their quaternary salts are disclosed. The quaternary salts are particularly useful in rendering carboxyl-containing polymers and other compositions resistant to the swelling from aqueous solutions.

3,681,373
XANTHENYL-AMINES
Stewart Sanders Adams, Redhill; Bernard John Armitage, Beeston; Bernard Vincent Heathcote, Lowdham, and Norman William Bristow, Woolaton, all of England, assignors to Boots Pure Drug Company Limited, Nottingham, England
Filed March 17, 1970, Ser. No. 20,426
Claims priority, application Great Britain, March 27, 1969, 16,179/69
Int. Cl. C07d *99/04*
U.S. Cl. 260—308 R 6 Claims

4-9'-Xanthenylamino-4H-1,2,4-triazoles and 1-9'-xanthenylaminoimidazoles, useful as antisecretory agents.

3,681,374
SYNTHETIC NACREOUS TRIAZOLE CRYSTALS AND METHOD FOR PRODUCTION THEREOF
Nobumitsu Yano, Iruma; Masao Fukushima, Tokyo; Itaru Fukibara, Tokyo, and Masanori Kishi, Tokyo, all of Japan, assignors to Assahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Aug. 11, 1970, Ser. No. 62,800
Int. Cl. C07d *55/06;* C09d *5/36*
U.S. Cl. 260—308 R 13 Claims

Pearl luster is developed by synthetic, nacreous, flake-shaped crystals of triazole compounds having a maximum length of 5 to 100 microns and a thickness of 500 to 1,200 A which are obtained by cooling a solution of a triazole compound in the presence of a surface active agent. The synthetic nacreous crystals are added to aqueous or alcoholic cosmetic lotions, soaps, milky lotions or pigment dispersions, whereby articles having elegant pearl luster can be obtained.

3,681,375
IMIDAZOLE ACETALS
Heinrich Adolphi, Limburgerhof, Upper Palatinate; Anna Steimmig, Ludwigshafen, Rhine, and Hermann Spaenig, Limburgerhof, Upper Palatinate, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Pfalz, Germany
Division of Ser. No. 563,964, July 11, 1966, Pat. No. 3,531,494. This application May 28, 1970, Ser. No. 41,612
Claims priority, application Germany, July 22, 1965, B 82,952
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 6 Claims

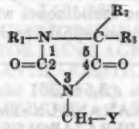
Imidazoles and salts thereof, the imidazoles being N-substituted by alkyl having 12 or 13 carbon atoms, alkoxyalkyl wherein the alkoxy portion has 2–13 carbon atoms and the alkyl portion has 1–13 carbon atoms, dimethoxy- or diethoxyethyl or unsubstituted or substituted phenoxy-methoxyethyl, and uses in insecticide compositions in admixture with pyrethrins, carbamates or phosphoric esters in the weight ratio of 1:10 to 1:1.

3,681,376
-N-HYDROXY-2-TRIFLUOROMETHYL BENZIMIDAZOLES AND CARBAMIC ESTERS THEREOF
Otto Scherer, Bad Soden/Taunus, and Hans Rochling, Konigstein/Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany
Filed June 16, 1969, Ser. No. 833,762
Claims priority, application Germany, June 19, 1968, P 17 70 658.0
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 26 Claims

The present invention is concerned with new N-hydroxy benzimidazoles and their use as herbicidally active compounds.

3,681,377
ISOTHIOCYANATOMETHYL AND THIOCYANATOMETHYL HYDANTOINS
Gopal H. Singhal, Westfield, N.J., assignor to Esso Research and Engineering Company
Filed May 13, 1970, Ser. No. 37,018
Int. Cl. C07d *49/32*
U.S. Cl. 260—309.5 15 Claims

Isothiocyanatomethyl and thiocyanatomethyl hydantoin derivatives corresponding to the following structure:



wherein R_1 is one selected from the group consisting of C_1–C_{12} alkyl optionally substituted by chlorine, bromine, C_1–C_6 alkoxy, cyano, or C_1–C_6 alkylthio; C_3–C_{10} carbalkoxyalkyl; C_3–C_6 alkenyl, C_3–C_6 alkynyl, C_3–C_6 cycloalkyl; phenyl optionally substituted with chlorine, bromine, trifluoromethyl, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio or NO_2, tetrahydrofurfuryl, C_2–C_4 acyl; R_2 and R_3 can be the same or different and either one is selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_1–C_4 chloroalkyl, C_1–C_4 alkoxy and phenyl; the alkyl groups at 1 and 5 positions may further be joined to give a five or six membered cyclic ring, Y is selected from the group NCS and SCN; have been found to possess a high degree of soil fungicidal activity.

3,681,378
1,5,5-TRIS(CYANOETHYL)-2-THIOHYDANTOIN
Frank Passal, Detroit, Mich., assignor to M & T Chemicals Inc., New York, N.Y.
Division of Ser. No. 364,278, May 1, 1964, Pat. No. 3,341,433
Filed April 17, 1967, Ser. No. 645,080
Int. Cl. C07d *49/32*
U.S. Cl. 260—309.5 1 Claim

This invention relates to novel processes and to novel β-cyanoethylated compounds selected from the group consisting of β-cyanoethylated thiohydantoin, β-cyanoethylated thiobarbituric acid, and β-cyanoethylated 2-thiouracil.

This invention relates to electroplating nickel and more particularly to the electrodeposition of bright nickel.

3,681,379
2-CARBAMYL-2-IMIDAZOLINES AND METHOD FOR THEIR PRODUCTION

Helmut Hagen, Frankenthal, and Friedrich Becke, Heidelberg, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Land Rheinland-Pfalz, Germany

Filed April 22, 1970, Ser. No. 30,935

Claims priority, application Germany, April 26, 1969, P 19 21 341.3

Int. Cl. C07d *49/34*

U.S. Cl. 260—247.5 R **6 Claims**

Production of 2-carbamyl-2-imidazolines by reacting haloacetamides with 1,2-alkylene diamines and elementary sulfur, and the 2-carbamyl-2-imidazolines.

The new compounds are auxiliaries for the textile and leather industries, plant protection agents and valuable starting material for the manufacture of textile and leather auxiliaries and plant protection agents.

3,681,380
THIAZOLINE AZETIDINONES

Robin D. G. Cooper, and David S. Fukuda, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 3, 1971, Ser. No. 112,390

Int. Cl. C07d *99/10*

U.S. Cl. 260—306.7 **8 Claims**

Novel 2-substituted thiazoline azetidinones are obtained from 2,6-disubstituted thiazoline azetidinones by treatment with lead tetraacetate followed by hydrolysis. The novel 2-substituted thiazoline azetidinones are reduced by treatment with aluminum amalgam or sodium borohydride to the corresponding thiazolidine azetidinones which are useful in the synthesis of penicillins and cephalosporins.

3,681,381
SYMMETRICAL AND UNSYMMETRICAL PYRAZABOLES

Swiatoslaw Trofimenko, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

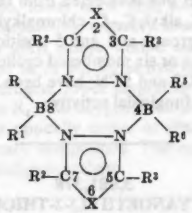
Continuation-in-part of Ser. No. 429,113, Jan. 29, 1965, abandoned. This application Aug. 2, 1968, Ser. No. 749,623

Int. Cl. C07d *49/02*

U.S. Cl. 260—310 **19 Claims**

Described and claimed are the following:

1. Symmetrical pyrazaboles and sym-triazaboles of the formula



wherein

(I)

R, R^1, R^5 and R^6 may be hydrogen, halogen, 1-pyrazolyl, alkyl, aryl, alkoxy, haloalkoxy, aryloxy, alkylamino, arylamino, azido, alkylmercapto and arylmercapto;

X may be N or CR^4; and R^2, R^3 and R^4 may be hydrogen, alkyl, halogen, haloalkyl, aryl, cyano, alkoxy, arylamino, alkoxy-carbonyl, nitro, acyl, mercapto and hydroxy with the proviso that R^2 and R^4 taken together may represent a fused benzo or naphtho structure. In the symmetrical pyrazaboles of this invention either $R = R^1 = R^5 = R^6$ or $R = R^5$ and $R^1 = R^6$.

2. Unsymmetrical pyrazaboles and sym-triazaboles as represented by formula (I), wherein

R and R^1 may be hydrogen, halogen, 1-pyrazolyl, alkyl, aryl, alkoxy, haloalkoxy, aryloxy, alkylamino, arylamino, azido, alkylmercapto and arylmercapto;

X may be N or CR^4;

R^2, R^3 and R^4 may be hydrogen, alkyl, halogen, halo-alkyl, aryl, cyano, alkoxy, arylamino, alkoxycarbonyl, nitro, acyl, mercapto and hydroxy with the proviso that R^2 and R^4 taken together may represent a fused benzo or naphtho structure; and

R^5 and R^6 are defined the same as R and R^1 with the proviso that 1-pyrazolyl is excluded as a substituent in the case of R^5 and R^6. In the unsymmetrical pyrazaboles and sym-triazaboles of this invention, at least one of R and R^1 is chemically distinguishable from R^5 and R^6.

3. The processes by which the pyrazaboles and sym-triazaboles of this invention may be prepared.

4. Polymers having incorporated therein the pyrazabole and sym-triazabole structure.

The compounds of this invention are useful as polymerization initiators, reducing agents and as reactants in the formation of condensation polymers containing the pyrazabole and sym-triazabole moieties.

3,681,382
3-AMINOINDAZOLES

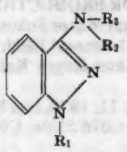
Heinz Werner Gschwend, Millburn, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 7, 1969, Ser. No. 797,702

Int. Cl. C07d *49/02*

U.S. Cl. 260—310 C **4 Claims**

New 1-aryl-3-aminoindazoles, e.g., those of the formula



R_1 = Aromatic radical

R_2 = H, alkyl, free, esterified or etherified hydroxyalkyl

R_3 = Aza-(alkyl, cycloalkyl-alkyl, aralkyl, alkanoyl, cycloalkyl-alkanoyl or aralkanoyl)

$R_2 + R_3$ = Aza-(alkylene, free, esterified or etherified hydroxy-alkylene or aralkylene)

and salts thereof are antidepressants.

3,681,383
2-PHENYLPYRAZALINONES AND PROCESS THEREFOR

Hans Von Castelmur, Basel, Switzerland, assignor to Solco Basel, AG, Basel, Switzerland

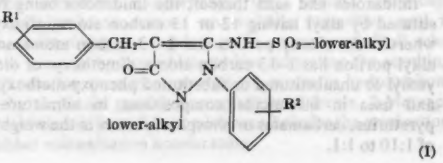
Filed July 8, 1969, Ser. No. 840,031

Claims priority, application Switzerland, July 12, 1968, 10459/68

Int. Cl. C07d *49/16*

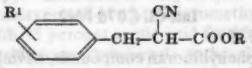
U.S. Cl. 260—310 A **8 Claims**

Novel analgesic and antiphlogestic 2-phenylpyrazolinones of the formula (I)



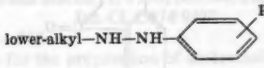
(I)

in which R^1 and R^2 may be identical or different and each denotes a hydrogen atom or halogen atom or a hydroxy, lower alkyl or lower alkoxy group or alkali metal salts thereof are made by condensing a benzylcyanoacetic ester having the formula (II):



(II)

in which R^1 has the above meaning and R denotes a lower alkyl radical with a hydrazine derivative having the formula (III):



(III)

in which R^2 has the above meaning and reacting the condensation product in the presence of a basic condensing agent with a lower alkanesulphonyl halide.

3,681,384

PROCESS FOR PREPARING PHTHALIMIDINES

Elmer J. Hollstein, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Sept. 17, 1970, Ser. No. 73,183
Int. Cl. C07d *27/50*
U.S. Cl. 260—325 **5 Claims**

A process for the preparation of lactams which comprises hydrogenating the diammonium salt of an ortho or meta aromatic dicarboxylic acid in the presence of a catalyst combination of Raney cobalt and palladium supported on carbon.

3,681,385

EPITHIO ALIPHATIC KETONES FOR THE CONTROL OF INSECTS

John B. Siddall, Palo Alto, Calif., assignor to Zoicon Corporation, Palo Alto, Calif.

Filed May 19, 1969, Ser. No. 826,005
Int. Cl. C07d *59/00, 71/00, 1/00*
U.S. Cl. 260—327 E **8 Claims**

Methods employing and compositions comprising an aliphatic hydrocarbon amide, ester, alcohol or ether having a chain length of 12–17 carbon atoms, unsaturation and C-2,3, lower alkyl group at C-3, C-7 and C-11, unsaturation saturation or cyclopropyl group at C-6,7 and epithiol or trithiocarbonate group at C-10,11 which are useful for the control of insects.

3,681,386

SUBSTITUTED ALKANAL OXIMES

Tomas L. Fridinger, and Edward L. Mutsch, both of Woodbury Township, Washington County, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 806,731, March 11, 1969, abandoned. This application Nov. 6, 1969, Ser. No. 874,715
Int. Cl. C07d *71/00, 73/00*
U.S. Cl. 260—327 M **9 Claims**

S,S'-disubstituted 2,2-thio, sulfinyl and sulfonyl alkanal oximes in which the sulfur atoms are optionally included in alicyclic rings are provided as valuable chemical intermediates for the preparation of physiologically active compounds.

3,681,387

PREPARATION OF 2-PYRROLIDINONE

Elmer J. Hollstein, Wilmington, Del., and Kenneth A. Scott, Swarthmore, Pa., assignors to Sun Oil Company, Philadelphia, Pa.

Filed Oct. 16, 1970, Ser. No. 81,545
Int. Cl. C07d *27/08*
U.S. Cl. 260—326.5 FN **5 Claims**

An improved process for preparing 2-pyrrolidinone at relatively low pressures which comprises reduction of succinimide in an aqueous system at temperatures of about 225° to 275° C., at a pressure in the range of about 1,200 to 1,500 p.s.i.g. and in the presence of a supported palladium catalyst.

3,681,388

N-SUBSTITUTED-3-AMINOALKANOYL FUSED CYCLOALKYL INDOLES

Marcel K. Eberle, Madison, N.J., assignor to Sandoz Wander Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 38,567, May 18, 1970, abandoned. This application Dec. 4, 1970, Ser. No. 95,406
Int. Cl. C07d *27/54*
U.S. Cl. 260—326.5 B **11 Claims**

N-substituted-3-aminoalkanoyl fused cycloalkyl[b]substituted indoles, e.g., 8-methyl-11-(3-aminobutanoyl)-cyclooct[b]indole hydrochloride, are prepared by treating a 2-phenyl or -2-(p-substituted phenyl)-4,5-substituted or unsubstituted-pyrazolidin-3-one with a cycloalkylanone. The compounds are useful as pharmaceutical agents, e.g., as sedative hypnotics, and as intermediates in the preparation of pharmaceutical agents.

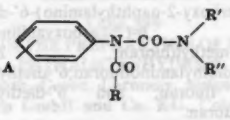
3,681,389

ACYLHETEROCYCLIC DERIVATIVES OF UREA SUITABLE FOR USE AS AGRICULTURAL ANTIPARASITICS

Pierre Poignant; Daniel Pillon, both of Lyon, and Rodolphe Caffiero, Francheville-le-Bas, all of France, assignors to PEPRO-Societe Pour le Developpement et La Vente de Specialites Chimiques

Division of Ser. No. 705,292, Feb. 14, 1968, Pat. No. 3,542,797. This application March 31, 1970, Ser. No. 24,358
Claims priority, application France, Feb. 16, 1967, 48303
Int. Cl. C07d *63/12*
U.S. Cl. 260—332.2 C **7 Claims**

The invention describes urea derivatives and process for their preparation which are useful as agricultural antiparasitic agents, herbicides and growth regulators and which have the general formula



in which R represents a 5- or 6-membered heterocyclic radical containing one or two identical or different hetero atoms; R' represents hydrogen, a methyl radical or a CH_2CH_2CN-radical; R'' represents one of the following radicals: an optionally saturated alkyl radical containing from one to four carbon atoms, a lower alkoxy radical, a lower alkoxy lower-alkyl radical or a CH_2CH_2CN-radical; A represents one or two identical or different radicals selected from the following: halogen, NO_2, lower alkyl, lower alkoxy, CH_3, SCN.

3,681,390
DIALKYLAMINO FLUORAN CHROMOGENIC COMPOUNDS

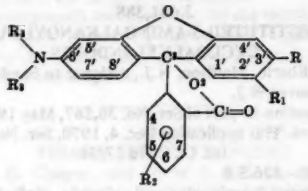
Chao-Han Lin, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Continuation-in-part of Ser. No. 792,401, Jan. 21, 1969, abandoned. This application Nov. 16, 1970, Ser. No. 90,097

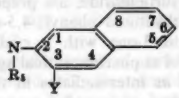
Int. Cl. C07d 5/34

U.S. Cl. 260—335 **20 Claims**

A chromogenic material of normally colorless form is disclosed, having a structural formula:



wherein one of R_1 and R_2 represents a chemical radical having the structure



or a chemical radical having the structure

wherein R_3 represents an alkyl radical having less than five carbon atoms or hydrogen radicals. Z represents nitro-, amino-, dialkylamino-, alkyl radicals have less than five carbon atoms or hydrogen radicals, and Y comprises nitro-, amino-, carboxyl, hydrogen and ester radicals and the remaining other R_1 and R_2 comprises amino-, nitro-, hydrogen, alkyl having less than five carbon atoms, acetamido and halogen radicals: R comprises hydrogen radicals and alkyl radicals having less than five carbon atoms; and R_3 comprises alkyl radicals having less than five carbon atoms; —said material assuming a colored form upon reactive contact with a Lewis acid molecule. Examples include 2′-(2-carboxyanilino)-6′-diethylaminofluoran; 2′-anilino-6′-diethylaminofluoran; 2′-(3-carbomethoxy-2-naphthylamino)-6′-diethylaminofluoran; 2′-(2-carbomethoxyanilino)-6′-diethylamino-3′-methylfluoran; 2′-(3-carboxy-2-naphthylamino)-6′-diethylamino-3′-methylfluoran; 6-(2-carboxyanilino)-2′-chloro-6′-diethylamino-3′-methylfluoran; 2′-(2-carboxy-4-nitroanilino)-6′-diethylaminofluoran;6′-diethylamino-2′-(N-methylanilino) fluoran; and 6′-diethylamino-2′-(2,4-dinitroanilino)fluoran.

3,681,391
1,6 OXIDOCYCLODECAPENTAENE ALCOHOLS, ALDEHYDES, AND ACIDS

John H. Fried, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama

Continuation-in-part of Ser. No. 742,140, July 3, 1968, abandoned. This application Sept. 9, 1970, Ser. No. 70,903

Int. Cl. C07d 9/00

U.S. Cl. 260—333 **10 Claims**

Novel 1,6-oxidocyclodecapentaene alcohols, aldehydes, and acids and derivatives having anti-inflammatory and fibrinolytic activity.

3,681,392
FLUORAN COMPOUNDS

Shiro Kimura; Teruo Kobayashi, and Sadao Ishige, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

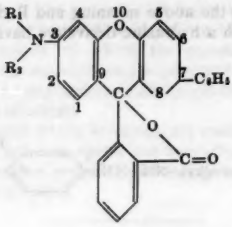
Filed April 16, 1970, Ser. No. 29,272

Claims priority, application Japan, April 17, 1969, 44/29836

Int. Cl. C07d 7/42

U.S. Cl. 260—335 **1 Claim**

3-Dialkyl-7-phenylfluoran compounds, having the formula,



wherein R_1 and R_2 each represents an alkyl group having from one to five carbon atoms, and a process for their preparation are disclosed. The 3-dialkyl-7-phenyl fluoran compounds are useful in pressure-sensitive and heat-sensitive copying papers.

3,681,393
BENZODIOXANE DERIVATIVES

Rochus Jonas, and Helmut Muller-Calgan, both of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

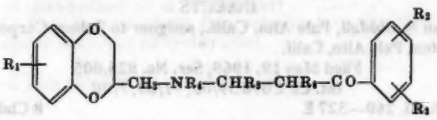
Filed Nov. 25, 1970, Ser. No. 92,957

Claims priority, application Germany, Nov. 27, 1969, P 19 59 562.1

Int. Cl. C07d 15/14

U.S. Cl. 260—340.5 **23 Claims**

Benzodioxane derivatives of the formula



wherein R_1 is H or Cl, R_2 and R_3 each are H, F, Cl, CH_3, OH or OCH_3, or R_2 and R_3 collectively are —O—CH_2O—, and R_4, R_5 and R_6 each are H or CH_3, including the acid addition salts thereof, exhibit psychotropic activity, including sedative, tranquilizing, neuroleptic, narcosis-potentiating, muscle-relaxing and antidepressant activity.

3,681,394
GLYCERYL-N-(SUBSTITUTED PHENYL) ANTHRANILATES

Margaret H. Sherlock, Bloomfield, N.J., assignor to Schering Corporation, Bloomfield, N.J.

Division of Ser. No. 629,382, April 10, 1967, Pat. No. 3,511,872. This application Jan. 21, 1970, Ser. No. 4,767

Int. Cl. C07d 13/04

U.S. Cl. 260—340.9 **7 Claims**

The invention relates to glyceryl esters of N-X,Y,Z-phenyl (anthranilic acids), to their use as analgesic anti-inflammatory agents, and to the intermediates useful in the preparation thereof. Illustrative of the preparation of those compounds is

the formation of glyceryl-N-(3-trifluoromethylphenyl) anthranilate, as follows: Reflux a mixture containing N-(3-trifluoromethylphenyl) anthranilic acid, chloroacetonitrile in the presence of triethylamine to produce cyanomethyl-N-(3-trifluoromethylphenyl) anthranilate which, by heating with 2,2-dimethyl-1,3-dioxolane-4-methanol in the presence of anhydrous potassium carbonate, produces β-γ-isopropylidenedioxypropyl anthranilate. Hydrolysis of the β-γ-isopropylidenedioxypropyl-N-(3-trifluoromethylphenyl) anthranilate with 75 percent acetic acid for 35 minutes yields glyceryl N-(3-trifluoromethylphenyl) anthranilate. Alternate methods for the preparation of the glyceryl esters of N-(X,Y,Z-phenyl) anthranilic acids are also described.

3,681,395
PREPARATION OF AMBRETTOLIDE

Braja D. Mookherjee, Matawan, and William I. Taylor, Summit, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed March 11, 1970, Ser. No. 18,684
Int. Cl. C07d 9/00
U.S. Cl. 260—343 **1 Claim**

A process for the preparation of ambrettolide and isomers thereof from 1,9-cyclohexadecadiene. Diepoxidized 1,9-cyclohexadecadiene is reduced to a mixture of cyclohexadecadiols and oxidized to the corresponding hydroxy ketones. These, upon oxidation in the presence of a boron trifluoride etherate catalyst, are converted into hydroxy cyclohexadecanolides which are dehydrated to form a mixture of isomers of ambrettolide which can be separated by conventional means, if desired.

3,681,396
PREPARATION OF CYCLOHEXADECANOLIDE

Braja D. Mookherjee, Matawan, and William I. Taylor, Summit, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed March 11, 1970, Ser. No. 18,758
Int. Cl. C07d 9/00
U.S. Cl. 260—343 **1 Claim**

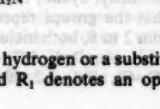
A process for preparing cyclohexadecanolide from 1,9-cyclohexadecadiene involving a number of steps. Monoepoxidized 1,9-cyclohexadecadiene is reduced to 9-cyclohexadecene-1-ol and oxidized to the corresponding unsaturated ketone and then hydrogenated to cyclohexadecanone. This upon oxidation in the presence of a boron trifluoride catalyst is converted into cyclohexadecanolide.

3,681,397
PROCESS FOR THE PRODUCTIO N OF 3-SUBSTITUTED 7-AMINO-COUMARINS

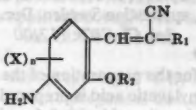
Hans Knupfer, Berg. Neukirchen, and Carl-Wolfgang Schellhammer, Opladen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 21, 1969, Ser. No. 852,105
Claims priority, application Germany, Aug. 23, 1968, P 17 93 262.6
Int. Cl. C07d 7/24
U.S. Cl. 260—343.2 R **5 Claims**

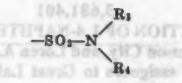
Process for the production of 3-substituted 7-amino-coumarins of the general formula



in which X stands for hydrogen or a substituent; *n* denotes the numbers 1 to 3; and R_1 denotes an optionally substituted phenyl or napthyl group, an aromatic-heterocyclic radial which is attached via a C—C bond, on a carboxyl group, characterized in that substituted β-phenyl-acrylic acid nitriles of the general formula



in which R_1, X and *n* have the same meaning as above; and R_2 stands for a radical



where R_3 and R_4 denote an alkyl radical, for a radical $—SO_2Z$ where Z denotes H or a metal atom, or for a radical $—CH_2OR_5$ where R_5 denotes an alkyl, aralkyl, or aryl radical, are heated in an aqueous-acidic medium, optionally in the presence of a water miscible or water-immiscible organic solvent, at temperatures of about 80°–200° C.

3,681,398
5-ACETAMIDE-6-METHYLTETRAHYDROPYRAN-2-ONE AND METHOD FOR ITS PRODUCTION

Hamao Umezawa; Kenji Maeda, and Yasuji Suhara, all of Tokyo, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Shinagawa-ku, Tokyo, Japan

Filed Jan. 27, 1969, Ser. No. 794,379
Claims priority, application Japan, Jan. 31, 1968, 43/5354; Jan. 31, 1968, 43/5355; Jan. 31, 1968, 43/5356; Jan. 31, 1968, 43/5357; Jan. 31, 1968, 43/5358; Jan. 11, 1969, 44/1908; Jan. 11, 1969, 44/1909
Int. Cl. C07d 7/14
U.S. Cl. 260—343.5 **2 Claims**

Process for the synthesis of 5-acetamide-6-methyltetrahydropyran-2-ol which is useful as a starting compound for the synthesis of kasugamycin and its homologue by acetylating DL-erythro-4-amino-5-hydroxyhexanoic acid with acetic anhydride and reducing 5-acetamide-6-methyltetrahydropyran-2-on with lithium aluminum hydride.

3,681,399
YIELDS IN THE PREPARATION OF PURIFIED PHTHALIC ANHYDRIDE

Hans-Dieter Barth, Geyen, Germany, assignor to Chemiebau Dr. A. Zieren GmbH and Co. KG, Cologne, Braunsfeld, Germany

Filed Feb. 6, 1969, Ser. No. 797,211
Claims priority, application Germany, Feb. 7, 1968, P 16 43 863.4
Int. Cl. C07c 63/18
U.S. Cl. 260—346.4 **5 Claims**

In the production and purification of phthalic anhydride by the vapor phase oxidation of o-xylene wherein it is customary to remove a predistillate containing substantial quantities of volatile impurities before conducting the main distillation, the improvement of recycling the predistillate to a prior stage in the process, preferably to the effluent from the catalytic reactor, without causing any substantial decrease in purity, but simultaneously increasing the yield of purified product.

3,681,400

PROCESS FOR THE PREPARATION OF SALTS OF AN OPTICALLY ACTIVE AMINE AND D(−)-α-AZIDOPHENYLACETIC ACID

Thore Oskar Verner Rydh, Sodertalje, Sweden, assignor to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

Filed Sept. 11, 1969, Ser. No. 857,219
Claims priority, application Sweden, Dec. 4, 1968, 16548/68
Int. Cl. C07c *117/00*
U.S. Cl. 260—349 12 Claims

A new process for the preparation of the 1-ephedrine salt of D(−)-α-azidophenylacetic acid is prepared by reacting 1 mole of DL-azidophenylacetic acid with 0.6 mole of 1-ephedrine in a liquid reaction medium in the presence of a substance which increases the solubility of the slats of 1-ephedrine and the two optical isomers of α-azidophenylacetic acid. A product of high optical purity is obtained in a single step.

3,681,401

PRODUCTION OF 1,4-NAPHTHOQUINONE

Louis A. Joo, Johnson City, and Loren A. Bryan, Elizabethton, both of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Dec. 22, 1966, Ser. No. 603,730
Int. Cl. C07c *49/66*
U.S. Cl. 260—396 R 2 Claims

Naphthalene in carbon tetrachloride has been oxidized by chromic acid to 1,4-naphthoquinone, the reaction being controlled by gradual addition of the sulfuric acid to the otherwise complete naphthalene-sodium dichromate-water-carbon tetrachloride reaction mixture. The yield of naphthoquinone has now been increased to about 60 percent, based on the naphthalene charge, by maintaining the weight ratio of carbon tetrachloride to naphthalene at a level within the range of 0.3:1 to 3:1.

3,681,402

ANTHRAQUINONE DYESTUFF MANUFACTURE

Guido R. Genta, c/o Koppers Company, Inc., 440 College Park Dr., Monroeville, Pa.

Filed May 6, 1969, Ser. No. 830,182
Int. Cl. C09b *1/50*
U.S. Cl. 260—373 4 Claims

Anthraquinone dyes are prepared in substantially quantitative yields by reacting a diaminodihydroxyanthraquinone, such as 4,5-diaminochrysazin, with a benzenesulfonyl chloride in a thin fluid melt consisting essentially of anhydrous aluminum halide in admixture with a compound that gives a fluid melt at low temperatures. New dyes having improved substantivity on polyester fibers are made by an alternate embodiment involving the concurrent addition of a halogen such as bromine to the anhydrous aluminum halide melt.

3,681,403

PROCESS FOR THE PRODUCTION OF 2,5-DIAMINO-3,6-DIHALOGENO-P-BENZOQUINONES

Tibor Somlo, Birsfelden, and Ivan Orban, Basel, both of Switzerland, assignors to Ciba-Geigy A.G., Basel, Switzerland

Filed July 26, 1968, Ser. No. 747,842
Claims priority, application Switzerland, Aug. 25, 1967, 11983/67
Int. Cl. C07c *97/08*
U.S. Cl. 260—396 R 8 Claims

2,5-diamino-3,6-dihalogeno-p-benzoquinones are produced in unexpectedly high yield rates and excellent purity from tetrahalogenated p-benzoquinones by reaction with ammonia in a reaction medium consisting of an aprotic dipolar organic solvent having a dielectric constant of at least 30 at 25°C.

3,681,404

PROCESS FOR THE PREPARATION OF 5-BROMO-6-FLUORO-STEROIDS

Reinhold Wieske, Berlin, Germany, assignor to Schering Aktiengesellschaft, Berlin, Germany

Filed March 27, 1970, Ser. No. 23,456
Claims priority, application Germany, March 29, 1969, P 19 16 823.1
Int. Cl. C07c *169/34*
U.S. Cl. 260—397.4 8 Claims

5-Bromo-6-fluoro steroids are produced by the bromine-fluorine addition to the double bond of a Δ^5-unsaturated steroid using an N-bromoacylamide or N-bromoimide and aqueous hydrogen fluoride. A novel steroid produced by the process is 6β-fluoro-5α-bromo-3β,17β-dihydroxy-androstane.

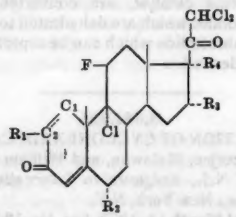
3,681,405

NOVEL 21,21-DICHLOROSTEROIDS

Henry Laurent; Karl H. Kolb, and Rudolf Wiechert, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Filed July 22, 1970, Ser. No. 57,334
Claims priority, application Germany, July 24, 1969, P 19 38 218.4
Int. Cl. C07c *169/34*
U.S. Cl. 260—397.3 13 Claims

21,21-Dichlorosteroids of the formula



wherein R_1 is a hydrogen or chlorine atom; R_2 is a hydrogen atom, a fluorine atom, or a methyl group; R_3 is a hydrogen atom or a methyl group; R_4 is a hydrogen atom or a free or esterified hydroxy group; and C_1—C_2 represents a single or double bond joining the carbon atoms at the 1- and 2-positions, have anti-inflammatory activity.

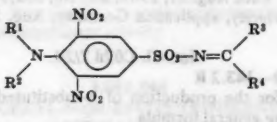
3,681,406

N-ALKOXYALKYLIDENESULFONAMIDE COMPOUNDS

James R. Beck, Indianapolis, Ind., assignor to Eli Lilly Company, Indianapolis, Ind.

Filed Nov. 3, 1970, Ser. No. 86,619
Int. Cl. C07c *143/78*
U.S. Cl. 260—397.7 7 Claims

The present invention is directed to novel compounds of the formula



which compounds are useful as herbicides. In the above and succeeding formulas herein, R^1 represents hydrogen or R^2, and each R^2 independently represents loweralkyl of C_1–C_4, loweralkenyl of C_3–C_4, loweralkynyl of C_3–C_4, or radical of the formula $—CH_2—CH_2(CH_2)_nY$, wherein n represents 0 or 1, and Y represents methoxy, cyano, bromo, or chloro, subject to the limitation that the groups represented by R^1 and R^2 together contain from 2 to 8, both inclusive, carbon atoms; R^3 represents hydrogen, loweralkyl of C_1–C_2, or phenyl; and R^4 represents alkyl of C_1–C_8, allyl, or 2-chloroethyl.

3,681,407

3-METHOXY8β-METHYLESTRA 1,3,5(10),9(11)-TETRAENE-17β-CARBOXYLIC ACID LOWER ALKYL ESTER AND INTERMEDIATES IN THE PREPARATION THEREOF

Marinus Los, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed June 18, 1969, Ser. No. 834,493
Int. Cl. C07c *169/24*
U.S. Cl. 260—397.1 4 Claims

This invention relates to novel steroid and steroid-like compounds, a method for synthesizing said compounds and to the use thereof as progestational agents in the treatment of laboratory and domestic animals. Certain of said compounds are also useful as estrogenic agents.

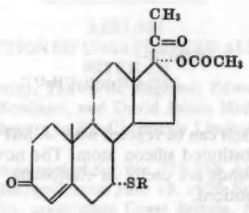
3,681,408

17α-ACETOXY-7α-ALKYLTHIOPROGESTERONES AND PRODUCTION THEREOF

Hidehiko Kaneko; Yuzuru Yamamoto, and Tatsuya Kon, all of Osaka-fu, Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka-shi, Japan

Filed Oct. 13, 1969, Ser. No. 866,013
Int. Cl. C07c *169/32*
U.S. Cl. 260—397.4 6 Claims

17α-Acetoxy-7α-alkylthioprogesterones of the formula:



wherein R is a lower alkyl group useful as progestational agents, particularly suited for oral administration, which are prepared by reacting 17α-acetoxypregna-4,6-diene-3,20-dione with alkyl mercaptan in the presence of a catalytic substance, preferably a quaternary ammonium type ion exchange resin.

3,681,409

9α-FLUORO-16-FLUOROMETHYLENEPREDNISOLONE-21-ENANTHATE AND PROCESS FOR THE PREPARATION THEREOF

Klaus Irmscher; Gerhard Cimbollek; Hans-Gunther Kraft, and Jurgen Harting, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Feb. 6, 1970, Ser. No. 9,408
Claims priority, application Germany, Feb. 11, 1969, P 19 06 586.2
Int. Cl. C07c *169/32*
U.S. Cl. 260—397.45 2 Claims

9α-fluoro-16-fluoromethyleneprednisolone-21-enanthate has high anti-proliferative activity with relatively little glyconeogenetic and adrenal atrophy side effects when administered to mammals having a skin disease such as psoriasis.

3,681,410

PROCESS FOR PREPARING 17α-HYDROXY-20-KETO AND 17α,21-DIHYDROXY-20-KETO PREGNANES AND DERIVATIVES AND INTERMEDIATES THEREOF

Pierre Crabbe, and Esperanza Velarde, both of Mexico City, Mexico, assignors to Syntex Corporation, Panama, Panama

Continuation-in-part of Ser. No. 854,742, Sept. 2, 1969, abandoned. This application Aug. 7, 1970, Ser. No. 62,201
Int. Cl. C07c *169/10*
U.S. Cl. 260—397.3 25 Claims

New processes for preparing 17α-hydroxy-20-keto and 17α,21-dihydroxy-20-keto pregnanes and derivatives thereof, which compounds are useful as progestational and anti-inflammatory agents. The processes utilize the steps of converting a 17α-ethynyl-17β-acyloxy steroid to the corresponding 17-vinylidene steroid with zinc in an ethylene glycol ether and oxidizing the 17-vinylidene steroid to form the corresponding product pregnanes. The novel 17-vinylidene compounds are useful as intermediates as herein described and are also useful anti-androgenic agents.

3,681,411

PREPARATION OF 17ALPHA PROPADIENYL STEROIDS

Pierre Crabbe, Mexico City, Mexico, and John H. Fried, Palo Alto, Calif., assignors to Syntex Corporation, Apartado, Panama

Continuation-in-part of Ser. No. 817,526, April 18, 1969. This application Dec. 29, 1970, Ser. No. 102,503
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.4 13 Claims

Disclosed is a process for the preparation of a 17α-propadienyl steroids of the estrogen, estrane, and androstane series which contain optional substitution at other positions of the nucleus. This process involves treating a corresponding (3-substituted propynyl) steroid wherein the substituent is halo, alkylsulfonyloxy or aryl sulfonyloxy with a dialkylborane or 9-borabicyclo-[3.3.1]-nonane, followed by base treatment. The 17α-propadienyl products are useful as estrogenic, anti-androgenic, and progestational agents.

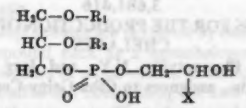
3,681,412

GLYCOL PHOSPHATIDES AND THE PREPARATION THEREOF FROM CEPHALIN

Hans Betzing, Heidestock, Germany, assignor to A. Nattermann & Cie GmbH, Cologne, Braunsfeld, Germany

Filed Sept. 28, 1970, Ser. No. 76,231
Claims priority, application Germany, Sept. 30, 1969, P 19 49 399.3
Int. Cl. C07f *9/02*; A23J *7/10*
U.S. Cl. 260—403 10 Claims

Glycol phosphatides of the formula



wherein R_1 and R_2 each are fatty acid groups of 10–24 carbon atoms, inclusive, X is a hydrogen atom or —COOH, which are useful as emulsifiers for intravenous fat-feeding, are produced by removing the amino group of colamine and serine phosphatides by treatment with aqueous nitrous acid under mild conditions followed by diazotization.

3,681,413
QUATERNARY AMMONIUM COMPOUNDS

Richard F. Sweeney, Dover, and Alson K. Price, Morristown, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed May 9, 1969, Ser. No. 823,520
Int. Cl. C09f 5/00
U.S. Cl. 260—404.5 9 Claims

Quaternary ammonium derivatives of polyfluoroisoalkoxyalkanamides characterized by having a fluorinated terminal group wherein an ether oxygen atom links a fluorinated carbon atom attached to two fluoroalkyl groups and at least one $-CF_2-$ group. These compounds are useful as surface active agents, as oil repellency agents, and as additives to dry powder fire extinguishing compositions.

3,681,414
METHOD FOR HALOGENATION OF UNSATURATED COMPOUNDS

Taketami Sakuragi, Tokyo, and Shinichi Akiyama, Kamakurashi, both of Japan, assignors to The Japanese Geon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 694,383, Dec. 29, 1967, abandoned. This application Oct. 29, 1970, Ser. No. 85,275
Claims priority, application Japan, Jan. 17, 1967, 42/2898
Int. Cl. C11c 3/00
U.S. Cl. 260—408 10 Claims

A method for the halogenation of unsaturated compounds, characterized in that at least one hydrogenhalide is reacted in the presence of an alkyl hypohalite at a temperature of −40°C. to 120°C. with a compound having a carbon-carbon unsaturated double bond to effect addition of halogen to the unsaturated double bond. The products obtained by the above-mentioned method are useful as industrial materials or intermediates.

3,681,415
CATALYTIC PREPARATION OF CARBOXYLIC ACID ESTERS FROM OLEFINS, ALCOHOLS AND CARBON MONOXIDE IN THE PRESENCE OF AN ALKYL ETHER OR ALKYL KETONE PROMOTER

Raymond A. Schell, Berkley, Mich., assignor to Ethyl Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 671,110, Sept. 27, 1967, abandoned. This application March 20, 1970, Ser. No. 21,472
Int. Cl. C07c 67/00
U.S. Cl. 260—410.9 R 33 Claims

A process is described for preparing carboxylic acid esters from olefins, alcohols and carbon monoxide using a combination of tin or germanium salt and a haloplatinum acid as the catalyst and a ketone or ether promoter.

Olefins having from eight to about 24 carbon atoms are preferred reactants. Alkyl ketones having up to 11 carbon atoms and alkyl ethers having up to 16 carbon atoms are useful promoters.

The reaction rate is unexpectedly improved by the promoter.

3,681,416
PROCESS FOR THE PRODUCTION OF METAL CHELATES

Ralph Miller, Pleasantville, N.Y., and Jorg H. Hoffmann, McIntosh, Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 29, 1968, Ser. No. 771,653
Int. Cl. C07f 13/00; C07c 99/10; C07f 15/00
U.S. Cl. 260—429 J 7 Claims

Method for the production of metal chelates by reacting an amino nitrile with sodium or potassium hydroxide and a metal oxide, or metal hydroxide. The metal chelates thus obtained are useful in correcting soil deficiencies and as nutrients for plants.

3,681,417
PREPARATION OF SILVER KETENIDES

Michael John Simons, Wealdstone, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 13, 1970, Ser. No. 63,658
Claims priority, application Great Britain, Feb. 6, 1970, 5,768/70
Int. Cl. C07f 1/10
U.S. Cl. 260—430 11 Claims

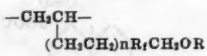
Silver ketenide complexes useful as liquid-phase oxidation catalysts and having the empirical formula Ag_2C_2O are prepared by reacting a silver compound such as silver nitrate, silver formate, silver acetate, silver propionate, silver sulfate, silver trifluoroacetate, silver benzoate and silver tetrafluoroborate with ketene in the presence of an inert atmosphere. A basic condensation catalyst such as a tertiary amine may be employed where advantageous. The reaction preferably is carried about at a temperature between about 18° C. to about 140° C.

3,681,418
FLUOROALKYLENE SILANES AND SILOXANES

Ogden R. Pierce, and Yung Ki Kim, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Nov. 5, 1969, Ser. No. 874,411
Int. Cl. C07f 7/04, 7/08, 7/18
U.S. Cl. 260—448.2 B 7 Claims

Fluorocompounds of the formula $CH_2(CH_2CH_2)_nR_fCH_2OR$ in which R_f is a perfluoroalkylene radical of no more than 18 carbon atoms and R is a hydrogen atoms or acyl radical. These monomers can be polymerized with a free radical catalyst to give



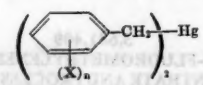
or the compounds can be reacted with ≡SiH to give the corresponding substituted silicon atom. The novel silicon containing compounds are useful as elastomers, lubricants, and coating compositions.

3,681,419
PROCESS FOR PRODUCING BISORGANOMERCURY COMPOUNDS

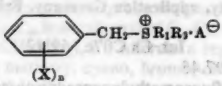
William J. Settineri, and Ritchie A. Wessling, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed April 13, 1970, Ser. No. 28,126
Int. Cl. C07f 3/12
U.S. Cl. 260—433 10 Claims

Bisorganomercury compounds having the formula



wherein n is an integer of from 0 to 5 and X is an inert, substantially non-interfering substituent, are prepared by contacting an alkali metal amalgam with a sulfonium salt of the formula



wherein X and n are as defined above, R_1 and R_2 are alkyl groups or R_1 joins with R_2 to form a cycloaliphatic group, or

the corresponding hydroxy-substituted alkyl or cycloaliphatic groups, and $A^{\ominus}$ is an anion. The reaction is preferably conducted in an aqueous solution. The bisorganomercury compounds are useful as catalysts for free-radical-initiated polymerizations and as fungicides, insecticides, and the like.

3,681,420

N,N'-BIS[TRI (SUBSTITUTED)SILYLALKYLENE]-1,4-XYLENE-α,α'-DIIMINE

Lloyd H. Brown, Crystal Lake; Andrew P. Dunlop, Riverside, and Daniel S. P. Eftax, Barrington, all of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed March 3, 1971, Ser. No. 120,737

Int. Cl. C07f 7/18

U.S. Cl. 260—448.8 R **7 Claims**

A new composition of the formula:

wherein R^1 is an alkylene radical and wherein OR^2 is a hydrolyzable group and R^2 is alkyl, aryl, heterocyclic, or substituted derivatives thereof; useful for example in promoting resin to sand and resin to resin bonds.

3,681,421

PRODUCTION OF UNSATURATED ALIPHATIC NITRILES

John Lynn Barclay, Tadworth, England; Edward James Gasson, Dollar, Scotland, and David James Hadley, Tadworth, England, assignors to BP Chemicals Limited, London, England

Continuation-in-part of Ser. No. 719,258, April 5, 1968, abandoned. This application June 18, 1970, Ser. No. 47,565

Claims priority, application Great Britain, April 18, 1967, 17,717/67

Int. Cl. C07c 121/02

U.S. Cl. 260—465.3 **4 Claims**

A process for the production of acrylonitrile by vapor phase catalytic ammoxidation of propylene at an elevated temperature over an oxide composition comprising antimony, vanadium and a polyvalent metal selected from tin, iron, cobalt, or titanium, in specified atom ratios.

3,681,422

DIFLUOROCHLOROMETHYLARYL UREAS, THEIR PREPARATION AND USE AS HERBICIDES

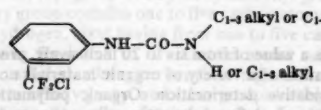
Otto Scherer, Bad Soden/Taunus; Reinhard Hahnle, Hofheim/Taunus, and Gunter Schneider, Buchschlag, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister, Lucius & Bruning, Frankfurt/Main, Germany

Continuation of Ser. No. 650,606, July 3, 1967, abandoned. This application Aug. 31, 1970, Ser. No. 68,539

Int. Cl. C07c 119/00

U.S. Cl. 260—453 R **2 Claims**

General 3-difluorochloromethylaryl ureas of the general formula



are useful as herbicides.

3,681,423

NOVEL FLUOROALKYL CHLOROSULFATES AND A METHOD FOR THEIR PREPARATION

David Edward Young, Denville; Lowell Ray Anderson, Parsippany, and William Burke Fox, Morristown, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 11, 1969, Ser. No. 856,240The portion of the term of this patent subsequent to Feb. 16, 1988, has been disclaimed.

Int. Cl. C07c 143/68

U.S. Cl. 260—456 R **6 Claims**

Hydrogen containing fluoroalkyl chlorosulfates of the formula:

$$R_fCOSO_2Cl$$

wherein R is selected from the group consisting of hydrogen, alkyl, fluoroalkyl and aryl with the proviso that at least one R substituent is fluoroalkyl, and at least one carbon-hydrogen bond is present in the molecule. The alkyl and fluoroalkyl moieties may have the same or a different number of carbon atoms and each may contain up to six carbons (lower alkyl) in a straight or branched chain structure and when R contains six carbon atoms, it may represent cyclic alkyl. These novel hydrogen containing fluorinated chlorosulfate products belong to a known class of halogenated alkyl chlorosulfates, being useful as intermediates for the preparation of corresponding esters, polyesters, and amides. The latter esters and polyesters are thermally stable fluids, especially in the highly fluorinated state, and are useful as such.

These novel hydrogen containing fluorinated chlorosulfates may be prepared by reacting the corresponding hypochlorite having the formula:

$$R_fCOCl$$

wherein R is defined as above, with sulfur dioxide at a temperature of between about −25° to 75° C. This method may also be used to prepare tertiary perfluorinated alkyl chlorosulfates having no hydrogen-to-carbon bonds in the molecule.

3,681,424

SECONDARY ALKYL SULFATE DETERGENT PROCESS

Herman S. Bloch, Skokie; George E. Illingworth, Arlington Heights, and George W. Lester, Palatine, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 26, 1968, Ser. No. 787,270

Int. Cl. C07c 139/08

U.S. Cl. 260—460 **4 Claims**

Secondary-alkyl sulfates are prepared by sulfating a C_9—C_{18} sulfatable compound such as a monohalogenated paraffin, monohydroxylalcohol or mono-olefin, in admixture with a C_9—C_{18} linear paraffin and neutralizing the acid alkyl-sulfate in admixture with the same paraffin to form a relatively colorless neutralized sec-alkylsulfate. This process is particularly adaptable where a C_9—C_{18} n-paraffin stream is partially converted to a sulfatable compound and the unreacted n-paraffin is not readily separable from the resultant sulfatable compound. Thus, the sulfation and neutralization are performed in admixture with the unreacted n-paraffin whereby the paraffin is readily separated from the neutralization product and recycled.

3,681,425

2,6,-DINITRA-4-TRIFLUOROMETHYL-ANILINES

Karl Kiehs; Karl-Heinz Koenig, both of Ludwigshafen, and Adolf Fischer, Mutterstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Dec. 16, 1968, Ser. No. 784,247
Claims priority, application Germany, Dec. 21, 1967, P 16 43 719.7
Int. Cl. C07c *121/52*
U.S. Cl. 260—465 E 1 Claim

New and valuable substituted dinitroanilines and a process for controlling the growth of unwanted plants with these compounds.

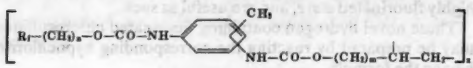
3,681,426

FLUORINATED POLYMERS HAVING BISURETHANO SIDE CHAINS

Helmut Hahn, Burghausen, Salzach; Siegfried Rebsdat, Altotting; Kasimir Ruchlak, Burgkirchen A12, and Erich Schuierer, Burghausen, Salzach, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Brunning, Frankfurt/Main, Germany

Filed Aug. 15, 1969, Ser. No. 850,643
Claims priority, application Germany, Aug. 30, 1968, P 17 95 261.3
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C 2 Claims

Polymers of the formula



in which R_f is perfluoroalkyl of six to 12 carbon atoms, n is an integer of 1 to 4, m is 0 or 1 and x is a number of about 10 to about 300, are useful as water- and oil-repellent agents for fibrous materials, especially materials consisting of or containing cotton or wool. The agents are used in aqueous dispersions or solutions in organic solvents.

3,681,427

7-ALKOXY-2α-CARBOXY-1α,2βDI-ALKYL-1,2,3,4,9,12αHEXAHYDROPHEN ANTHRENES AND ESTERS AND SALTS THEREOF

John A. Edwards, Los Altos, and John H. Fried, Palo Alto, both of Calif., assignors to Syntex Corporation, Panama, Panama

Filed Dec. 9, 1969, Ser. No. 883,582
Int. Cl. C07c *69/76*
U.S. Cl. 260—468.5 10 Claims

New compounds of the 1,2,3,4,9,12-hexahydrophenanthrene class, useful as estrogenic and anti-fertility agents, and methods for their preparation. 1α-Ethyl-2α-carboxy-2β-methyl-7-methoxy-1,2,3,4,9,12-hexahydrophenanthrene is exemplified as illustrative of the class.

3,681,428

SYNTHESIS OF PHOSPHORANE COMPOUNDS

Donald Leroy Roberts, and William Yates Rice, Jr., both of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Oct. 24, 1968, Ser. No. 770,429
Int. Cl. C07c *69/76*
U.S. Cl. 260—469 2 Claims

Synthesis of phosphorane compounds by reaction of a triarylphosphine, an α-haloester and an amine.

3,681,429

COMPLEX OF THE METHYL ESTERS OF 3-AMINO-2,5-DICHLOROBENZOIC ACID AND 2,5-DICHLORO-3-NITROBENZOIC ACID

David E. Graham, Westfield; Thomas Schulze, Elizabeth, and Marvin M. Fein, Westfield, all of N.J., assignors to GAF Corporation, New York, N.Y.

Filed March 11, 1970, Ser. No. 18,768
Int. Cl. C07c *101/54*
U.S. Cl. 260—471 R 1 Claim

A novel complex which is formed when essentially equimolar proportions of the methyl ester of 3-amino-2,5-dichlorobenzoic acid and the methyl ester of 2,5-dichloro-3-nitrobenzoic acid are heated together which complex shows herbicidal activity.

3,681,430

ESTERIFICATION PROCESS FOR THE PREPARATION OF DIETHYLAMINOETHYL P-NITROBENZOATE

Carl A. Kolb, Montville, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed March 6, 1969, Ser. No. 805,021
Int. Cl. C07c *101/62*
U.S. Cl. 260—472 4 Claims

A process for the preparation of diethylaminoethyl p-nitrobenzoate via the p-nitrobenzoate salt, comprising esterification with at least 1.75 molar proportions of p-nitrobenzoic acid. The ester thus produced is an intermediate for the preparation of procaine.

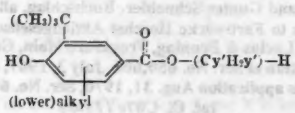
3,681,431

N-OCTADECYL 3,5-DI-T-BUTYL-4-HYDROXYBENZOATE

Martin Dexter, Briarcliff Manor; John Denon Spivack, Spring Valley, and David Herbert Steinberg, Bronx, all of N.Y., assignors to Ciba-Geigy Corporation, New York, N.Y.

Continuation of Ser. No. 616,794, Feb. 17, 1967, abandoned, which is a division of Ser. No. 354,434, March 24, 1964, Pat. No. 3,330,859, which is a continuation-in-part of Ser. No. 276,192, April 29, 1963, abandoned, which is a continuation-in-part of Ser. No. 164,618, Jan. 5, 1962, abandoned, which is a continuation-in-part of Ser. No. 148,738, Oct. 30, 1961, abandoned. This application Feb. 6, 1970, Ser. No. 7,417
Int. Cl. C07c *69/78*
U.S. Cl. 260—473 S 1 Claim

Alkyl dialkylhydroxybenzoates of the formula:



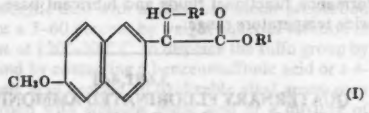
in which y' has a value of from six to 20 inclusively, are useful in the stabilization of a variety of organic materials normally subject to oxidative deterioration. Organic polymeric substances such as polyolefins, lubricating oils, waxes and resins are among the organic materials stabilized.

3,681,432
2-FORMYL-(6-METHOXY-2-NAPHTHYL) ACETIC ACID

Peter H. Nelson, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama

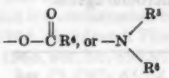
Filed Sept. 30, 1969, Ser. No. 862,500
Int. Cl. C07c 63/36
U.S. Cl. 260—473 F 1 Claim

2-(6-Methoxy-2-naphthyl)propionic acid is prepared by reacting a compound having the formula



(I)

with hydrogen in the presence of a hydrogenation catalyst until a 2-(6-methoxy-2-naphthyl)propionate is formed, and hydrolyzing the ester group of the propionate. In the formula, R^1 is an alkyl, cycloalkyl, aralkyl or alkenyl group and R^2 is $-OR^3$, $-SR^3$,



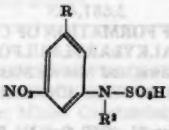
wherein R^3, R^5 and R^6 each is alkyl or cycloalkyl; R^4 is alkyl, cycloalkyl, aryl or aralkyl; and R^5 and R^6 together can be ethylene or a polymethylene group having from three to seven carbons. The product has anti-inflammatory, analgesic, and anti-pyretic activities.

3,681,433
PROCESS FOR THE PREPARATION OF ACYLAMIDE-2,4,6-TRIIODOBENZOIC

Vegard Nordal, Nils Huus, Oslo, Norway, assignor to Nyegaard & Co. A/S, Oslo, Norway

Filed Oct. 30, 1968, Ser. No. 772,014
Claims priority, application Great Britain, Nov. 9, 1967, 51,144/67
Int. Cl. C07c 143/52
U.S. Cl. 260—470 5 Claims

Process for the preparation of acylamido -2,4-triiodobenzoic acids, useful as x-ray contrast agents, which comprises the use of sulphamic acid derivatives of benzoic acid as intermediates wherein the intermediates have the general formula



wherein:

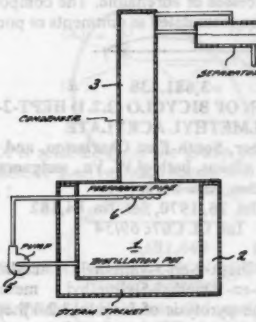
R is a carboxyl group of an alkoxy carbonyl group wherein the alkoxy group contains one to five carbon atoms;

R^2 is hydrogen, alkyl having from one to five carbon atoms, alkyl having from one to five carbon atoms substituted by hydroxy, carboxyl, alkoxy carbonyl having one to five carbon atoms in the alkoxy group, and ether groups having one to five carbon atoms. The salts of these compounds with bases can also be used.

3,681,434
BATCH DISTILLATION OF PHTHALATE ESTERS WITH RECYCLE AND SPRAYING

John Waller Neely, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed April 17, 1970, Ser. No. 29,654
Claims priority, application Great Britain, April 30, 1969, 22,084/69
Int. Cl. B01d 3/00; C07c 69/76
U.S. Cl. 260—475 B 2 Claims



In a batch distillation process, particularly a batch esterification process in which water is continuously distilled off, the time required for removal of the volatile component is shortened by withdrawing a part of the liquid distilland and introducing it into the vapor space above the liquid as a spray of fine droplets.

3,681,435
PHENYL-SUBSTITUTED PHOSPHOROUS COMPOUND AND PROCESS FOR ITS PREPARATION

Gunter Bergerhoff, Lengsdorf; Bela Tihanyi, Bonn; Jurgen Falbe, Dinslaken, and Jurgen Weber, Oberhausen-Holten, all of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen-Holten, Germany

Filed Oct. 7, 1968, Ser. No. 765,687
Claims priority, application Germany, Oct. 13, 1967, P 16 68 614.9
Int. Cl. C07f 9/50
U.S. Cl. 260—475 SC 7 Claims

A phenyl-substituted phosphorous compound is produced by reaction of malonic acid diethylester with phenylphosphine dichloride. Apparently, two moles of each of the reactants, under elimination of four moles of hydrogen chloride, form the compound. The compound is useful as pest control agents.

3,681,436
1-(PARAOXYBENZYL)-INDANES

Don Muri Lynch, Waukegan, and John Wayne Cole, Deerfield, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 604,126, Dec. 26, 1966, abandoned, which is a continuation-in-part of Ser. No. 583,250, March 10, 1966, abandoned. This application Aug. 20, 1970, Ser. No. 65,657
Int. Cl. C07c 69/16, 43/22, 39/12
U.S. Cl. 260—479 R 7 Claims

The present invention is directed to 1-(4-substituted benzyl)indans and simple analogs thereof; they have been found to inhibit the metabolic function of reproductive organs when administered to female, warm-blooded animals in very small doses.

3,681,437

CITRATES OF 5-(Z-DIMETHYLAMINOETHOXY)CARVACROL ACETATE

Guy Dedieu, 72 Rue du Palais Gallien, 33 Bordeaux, and Claude Defour, 27 Rue Delabordere, 92 Neuilly SuSeine, both of France

Filed Aug. 12, 1968, Ser. No. 751,761
Int. Cl. C07c *93/26*
U.S. Cl. 260—479 R 2 Claims

The di-,mono- and neutral citrates of 2-acetyl-5-ethoxydimethylamino carvacrol and their use in therapy. In particular, the diacid citrate of 2-acetyl-5-ethoxydimethylamino carvacrol has properties which make it possible to treat local disorders caused by excesses of adrenaline. The compounds are especially useful when formulated as ointments or pomades.

3,681,438

PREPARATION OF BICYCLO (2.2.1) HEPT-2-EN-YLMETHYL ACRYLATE

Paul Spencer Starcher, South East Charleston, and Bertrand Donahay Ash, St. Albans, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 26, 1970, Ser. No. 84,182
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R 9 Claims

Bicyclo [2.2.1]hept-2-en-5-ylmethyl acrylate and bicyclo[2.2.1]ept-2-en-5-methyl-5-ylmethyl methacrylate are produced by the pyrolysis of bicyclo[2.2.1]hept-5-en-2-methyl bicyclo[2.2.1]hept-5-en-2-carboxylate and bicyclo-[2.2.1]hept-5-en-2-methyl-2-ylmethyl bicyclo[2.2.1]hept-5-en-2-methyl-2-carboxylate, respectively, at temperatures of from about 180°C. to about 360°C. Pyrolysis at temperatures of about 360° and above produces allyl acrylate and 2-methylallyl methacrylate, respectively. The monomers produced can be polymerized by themselves or in admixture with other monomers to produce useful polymers and coating compositions.

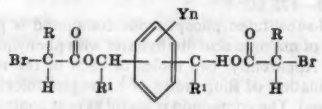
3,681,439

SUBSTITUTED BIS(BROMOACETOXY)-XYLENES

Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Aug. 28, 1969, Ser. No. 853,973
Int. Cl. C07c *69/62*
U.S. Cl. 260—487 3 Claims

Compounds having the formula



in which R is hydrogen or cyano and R^1 is hydrogen or methyl, Y IS H, lower alkyl or halo, *n* is a whole integer of from 1 to 4, and the use of these compounds as biocides such as in controlling fungi and bacteria.

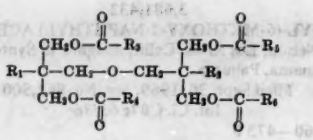
3,681,440

ESTERS OF TETRAHYDROXY DINEOALKYL ETHERS

Virgil W. Gash, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed June 12, 1969, Ser. No. 832,842
Int. Cl. C11c *3/08*
U.S. Cl. 260—488 J 6 Claims

Esters of organic monocarboxylic acids and dineoalkyl ethers with a tetrahydroxy functionality and corresponding to the general structure



wherein each R is an alkyl, aryl, or alkyaryl group of one to 12 carbon atoms. These compounds are effective as high performance functional fluids and lubricant base stocks over a wide temperature range.

3,681,441

QUATERNARY FLUORINATED AMMONIUM SALTS

Jerry E. Robertson, North Oaks, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed April 13, 1970, Ser. No. 27,976
Int. Cl. C07c *87/30*
U.S. Cl. 260—501.15 8 Claims

The disclosed quaternary ammonium salts contain a hydrofluoroalkyl substituent on the quaternary nitrogen atom. Processes for the preparation of these salts and compositions containing them are described. These salts and their compositions are active antimicrobial agents.

3,681,442

ALKYLAROMATIC SULFONATE DETERGENT PROCESS OF PREPARATION

Herman S. Bloch, Skokie; George E. Illingworth, Arlington Heights, and George W. Lester, Palatine, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 26, 1968, Ser. No. 787,268
Int. Cl. C07c *143/24*
U.S. Cl. 260—505 A 3 Claims

Alkylaromatic sulfonates, containing a C_9–C_{18} linear alkyl group, are prepared by sulfonating the corresponding alkylbenzene in admixture with a C_9–C_{18} n-paraffin and neutralizing the resultant alkylbenzene sulfonic acid, in admixture with the same paraffin, to produce a relatively colorless neutralized alkylbenzene sulfonate. This process is particularly adaptable where a C_9–C_{18} n-paraffin stream is first converted to an alkylatable compound such as a monohalogen or mono-olefin, and such compound is not readily separable from the n-paraffin. Thus, the alkylation, sulfonation and nuetralization are all performed in admixture with the unreacted n-paraffin whereby the paraffin is readily separable from the final product, for recycle purposes.

3,681,443

RETARDATION OF FORMATION OF COLOR-FORMING BODIES IN ALKYLARYL SULFONIC ACIDS

Albert Benson, Fairlawn, and Marvin Mausner, Teaneck, both of N.J., assignors to Witco Chemical Corporation, New York, N.Y.

Filed May 21, 1969, Ser. No. 826,712
Int. Cl. C07c *143/24*
U.S. Cl. 260—505 P 6 Claims

Alkylaryl sulfonic acids, exemplified by C_9 to C_{15} alkylbenzene sulfonic acids, containing small proportions of α, β-unsaturated carboxylic acids, such as maleic anhydride, which function to inhibit formation of color-forming bodies in said sulfonic acids during processing, aging and/or heating thereof. The sulfonation of the alkylaryl hydrocarbons is carried out with sulfur trioxide, particularly in a liquid sulfur dioxide medium, and the α, β-unsaturated carboxylic acids are advantageously added after the completion or substantial completion of the sulfonation reaction proper.

3,681,444

PREPARATION OF PARA NITROBENZOIC ACIDS AND 4'-NITRO-4-BIPHENYLCARBOXYLIC ACIDS

Robert H. Sullivan, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 21, 1970, Ser. No. 74,194
Int. Cl. C07c 79/46
U.S. Cl. 260—515 R 14 Claims

Preparation of p-nitrobenzoic and 4'-nitro-4-biphenylcarboxylic acids by contacting a p-sulfo benzoic acid or 4'-sulfo-4-biphenylcarboxylic acid with at least one molar proportion of nitric acid as a 5–60 percent by weight aqueous solution in the liquid phase at 120°–300° C. to displace the sulfo group by a nitro group and by contacting a benzenesulfonic acid or a 4-biphenyl sulfonic acid bearing an oxidizable alkyl group para to the sulfo group with aqueous nitric acid or a mixture of nitric acid and molecular oxygen containing gas at a temperature of 120°–300° C. in a single overall reaction.

3,681,445

SUBSTITUTED PHENYL BENZOIC ACID COMPOUNDS

William V. Ruyle, Scotch Plains; Lewis H. Sarett, Princeton, and Alexander R. Matzuk, Colonia, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 577,819, Sept. 8, 1966, abandoned, which is a continuation-in-part of Ser. No. 420,823, Dec. 23, 1964, abandoned. This application Jan. 19, 1968, Ser. No. 699,017
Int. Cl. C07c 65/14
U.S. Cl. 260—520 6 Claims

The invention relates to substituted 5-(phenyl)benzoic acid esters and non-toxic pharmaceutically accepted salts thereof and processes for their preparation. The substituted 5-(phenyl)benzoic acids are useful as anti-inflammatory compounds. Also included are method of treating inflammation claims by administering these particular compounds to patients.

3,681,446

PROCESS FOR THE PRODUCTION OF PARA-CHLOROBENZOIC ACID

Nathan Dale Ledford, Chattanooga, Tenn., assignor to Velsical Chemical Corporation, Chattanooga, Tenn.

Continuation-in-part of Ser. No. 580,188, Sept. 19, 1966, abandoned. This application April 1, 1970, Ser. No. 24,875
Int. Cl. C07c 63/02
U.S. Cl. 260—524 R 8 Claims

This invention discloses a new process for preparing para-chlorobenzoic acid from a mixture of ortho- and para-chlorotoluene containing at least 10 percent of the para isomer which comprises oxidizing said mixture by means of an oxygen containing gas in a liquid reaction medium consisting of lower monocarboxylic acid, a carboxylic anhydride or mixtures thereof in the presence of an oxidation catalyst and thereafter recovering the precipitated para-chlorobenzoic acid from the reaction mixture.

3,681,447

PROCESS FOR PRODUCING 6-HYDROPEROXHEXANOIC ACID

Jean-Claude Brunie; Michel Constantini; Noel Crenne, all of Lyon, and Michel Jouffret, Villeurbanne, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Oct. 8, 1969, Ser. No. 864,884
Claims priority, application France, Oct. 11, 1968, 68169636
Int. Cl. C07c 73/06
U.S. Cl. 260—533 C 6 Claims

6-Hydroperoxyhexanoic acid, useful for introducing acidic groups into polymers is made by extracting oxidation products of cyclohexane with oxygen in the absence of a metallic catalyst with water, and re-extracting the said acid from the aqueous extract with a water-immiscible alcohol, ester or ketone.

3,681,448

PERFLUORO-1-CYCLOALKEN-1,2-YLENE-DIPHOSPHORYL COMPOUNDS

Arlen W. Frank, Grand Island, N.Y., and Charles F. Baranauckas, Memphis, Tenn., assignors to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 438,105, March 8, 1965, Pat. No. 3,501,555. This application Sept. 8, 1969, Ser. No. 870,802
Int. Cl. C07f 9/28
U.S. Cl. 260—543 P 3 Claims

A perfluoro-1-cycloalken-1,2-ylenediphosphoryl halide of the formula

wherein X is selected from the group consisting of chlorine and bromine, R' is an organic radical, *m* is from 2 to 4, and *n* is from 0 to 1.

3,681,449

CATALYTIC PREPARATION OF CHLOROACID CHLORIDES

William W. Prichard, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 23, 1970, Ser. No. 57,751
Int. Cl. C07c 51/58
U.S. Cl. 260—544 A 8 Claims

Disclosed herein is a process for making chloroacid chlorides by reacting olefinic compounds with either phosgene in the presence of carbon monoxide, or with the equivalent of phosgene, a preheated mixture of chlorine and carbon monoxide. Where the phosgene equivalent is employed, carbon monoxide is used in excess over the amount required to give phosgene. The process is carried out in the presence of palladium and/or rhodium catalysts, at temperatures of above about 75° C. and pressures of above about 100 atmospheres.

3,681,450

PREPARATION OF P-AMINOBENZOYL CHLORIDE SALTS

Rudolph A. Carboni, Centerville, Del., and Josef Pikl, Glassboro, N.J., assignors to E. I. du Pont De Nemours and Company, Wilmington, Del.

Filed July 18, 1969, Ser. No. 843,233
Int. Cl. C07c 51/58
U.S. Cl. 260—544 M 11 Claims

Preparation of p-aminobenzoyl chloride salts by reacting a p-aminobenzoic acid salt with at least about 1.2 moles, per mole of said p-aminobenzoic acid salt, of thionyl chloride or phosphorus pentachloride in an inert solvent as herein defined at from about 20°–120° C., by either batch or continuous processes, the resulting product being a valuable monomer for preparation of thermally resistant p-benzamide polymers.

3,681,451

AROMATIC ACID CHLORIDE PROCESS

Christian S. Rondestvedt, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 10, 1969, Ser. No. 875,533
Int. Cl. C07c 51/58
U.S. Cl. 260—544 M 11 Claims

Process for preparing aromatic acid chlorides such as isophthaloyl chloride and terephthaloyl chloride, useful as intermediates for making polyester, polyamide and the like condensation polymers, which includes the steps of contacting an aromatic compound containing at least one trichloromethyl

group bonded to an aromatic carbon atom with sulfur dioxide in the absence of added metallic compounds at a temperature of at least about 80° C. and at a pressure and for a time sufficient to convert at least one trichloromethyl group to an acid chloride group.

3,681,452
AROMATIC ACID CHLORIDE PROCESS
Christian S. Rondestvedt, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 10, 1969, Ser. No. 875,540
Int. Cl. C07c *51/58*
U.S. Cl. 260—544 M 6 Claims

Process for preparing aromatic acid chlorides such as isophthaloyl chloride and terephthaloyl chloride, useful as intermediates for making polyester, polyamide and the like condensation polymers, which includes heating (A) a benzenoid aromatic hydrocarbon bearing at least one methyl or chloromethyl group and, optionally, bearing ring halogen, carboxyl or carbonyl chloride groups, the carbon-containing groups being positioned other than ortho to each other when more than one is present, and (B) thionyl chloride (C) in the presence of nickel or an alloy thereof, at a temperature (normally within the range 200°–300° C.) and a pressure sufficient to convert at least one of the methyl or chloromethyl groups to a carbonyl chloride group.

3,681,453
AROMATIC ACID CHLORIDE PROCESS
Christian S. Rondestvedt, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 10, 1969, Ser. No. 875,541
Int. Cl. C07c *51/58*
U.S. Cl. 260—544 M 9 Claims

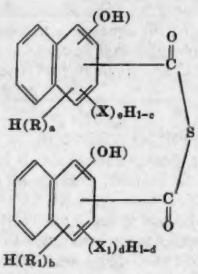
Process for preparing aromatic acid chlorides such as isophthaloyl chloride and terephthaloyl chloride, useful as intermediates for making polyester, polyamide and the like condensation polymers, which includes heating an aromatic compound containing at least one dichloromethyl group bonded to an aromatic carbon atom with a sulfur reactant (SO_3, $SOCl_2$ or mixtures thereof) and, optionally, molecular oxygen at about 200°–300° C. and at a pressure and for a time sufficient to convert at least one dichloromethyl group to a carbonyl chloride group.

3,681,454
AROMATIC ACID CHLORIDE PROCESS
Christian S. Rondestvedt, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 10, 1969, Ser. No. 875,544
Int. Cl. C07c *51/58*
U.S. Cl. 260—544 M 17 Claims

Process for preparing aromatic acid chlorides such as isophthaloyl chloride and terephthaloyl chloride, useful as intermediates for making polyester, polyamide and the like condensation polymers, which basically consists of contacting an aromatic compound containing at least one trichloromethyl group bonded to an aromatic carbon atom with a phosphorus compound, $P_2O_5 \cdot xM_{2/q}O$, where x is a number from zero to five inclusive and M is hydrogen or a salt-forming metal of valence q, at a temperature and pressure and for a time sufficient to convert at least one trichloromethyl group to an acid chloride group.

3,681,455
HYDROXYNAPHTHOIC ANHYDRIDES
Stanley B. Mirviss, Stamford, Conn., assignor to Stauffer Chemical Company, New York, N.Y.
Continuation-in-part of Ser. No. 788,106, Dec. 30, 1968, abandoned. This application Oct. 9, 1970, Ser. No. 79,668
Int. Cl. C07c *153/00*
U.S. Cl. 260—545 R 6 Claims

Vinyl polymer compositions are stabilized against degradation and discoloration due to heat by adding to the polymer a stabilizing amount of a novel compound of the formula:



wherein H(R) and H(R_1) are alkyl, alkyl halide or alkoxy groups containing from one to about 12 carbon atoms, X and X_1 are halogen, and a, b, c, and d are integers having a value of zero or 1.

3,681,456
THIOUREA COMPOUND
Gayle Dameron Edwards, Nederland, and Philip Hotchkiss Moss, Austin, both of Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.
Filed May 26, 1969, Ser. No. 827,989
Int. Cl. C07c *157/06*
U.S. Cl. 260—552 R 1 Claim

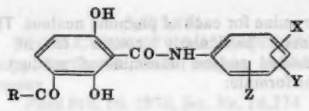
New compounds having the formula [HO-alkylene-(O-alkylene)$_x$NH]c2C=S are chain extenders for polyurethanes.

3,681,457
METHOD OF MAKING TETRAMETHYLUREA
Harry Babad, North Muskegon, Mich., assignor to The Ott Chemical Company
Filed Feb. 26, 1969, Ser. No. 802,665
Int. Cl. C07c *127/00*
U.S. Cl. 260—553 R 2 Claims

Covers a method of making tetramethylurea by reacting dimethylamine and phosgene in presence of an aqueous base solution and then recovering the resultant tetramethylurea by utilizing a halogenated lower aliphatic solvent to extract the tetramethylurea from its reaction mass.

3,681,458
3-ACYL-γ-RESORCYLIC ACID ANILIDES
Heinrich Ruschig, Bad Soden/Taunus; Dieter Duwel, Hofheim/Taunus; Johann Konig, Niederhofheim/Taunus, and Heinz Loewe, Kelkheim/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt/Main, Germany
Filed Sept. 1, 1970, Ser. No. 68,775
Claims priority, application Germany, Sept. 16, 1969, P 19 46 751.7
Int. Cl. C07c *103/38*, *103/30*
U.S. Cl. 260—559 S 4 Claims

Anthelmintically active 3-acyl-γ-resorcylic acid anilides of the formula



in which R is linear or branched alkyl having one to six carbon atoms, X is hydrogen, halogen, nitro or trifluoromethyl, and Y and Z, which are the same or different, are hydrogen, methyl, trifluoromethyl, methoxy or halogen, as well as a process for their preparation.

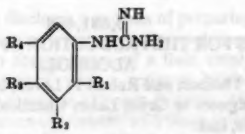
3,681,459

GUANIDINE COMPOUNDS AND USE OF SAME

John Lawrence Hughes, and Robert Chung-Huan Liu, both of Kankakee, Ill., assignors to Armour Pharmaceutical Company, Chicago, Ill.

Filed Oct. 1, 1970, Ser. No. 77,343
Int. Cl. C07c *129/08*
U.S. Cl. 260—565 **3 Claims**

Novel aromatic guanidine compounds having the formula:



wherein: R_1 is hydrogen; R_2 is chloro, fluoro or bromo; R_3 is hydroxy, or alkyl having one to four carbon atoms; and R_4 is hydrogen, chloro, bromo or fluoro are found to have biological activity. The guanidine compounds and their salts are shown to be active as vasoconstrictor agents and create useful pharmaceutical preparations when deployed with a pharmaceutically acceptable carrier for administration to a host, e.g., man, requiring vasoconstrictive therapy.

3,681,460

PROCESS FOR THE PREPARATION OF LYSINE

John Pisanchyn, Morristown; Robert Fuhrmann, Morris Plains; Stylianos Sifniades, Parsippany, and Allen Abraham Tunick, Denville, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 25, 1969, Ser. No. 852,947
Int. Cl. C07c *131/00*
U.S. Cl. 260—566 A **1 Claim**

Lysine is produced by a process comprising the steps of

1. Nitrating cyclohexanone to form 2-nitrocyclohexanone;
2. Nitrosating the 2-nitrocyclohexanone to form 2-nitro-6-oximinocyclohexanone;
3. Ring opening the 2-nitro-6-oximinocyclohexanone in alcoholic base to form an ester of 2-oximino-6-nitrocaproic acid;
4. Hydrogenating the 2-oximino-6-nitro caproic acid alkyl ester to form an alkyl ester of lysine; and
5. Saponifying the lysine alkyl ester to afford lysine or a salt thereof.

3,681,461

6-(3-DILOWERALKYLAMINO-PROPYL)-7-(12H)-PLEIADENONES AND SALTS THEREOF

Carl Kaiser, Haddon Heights, N.J., and Charles L. Zirkle, Berwyn, Pa., assignors to Smith Kline and French Laboratories, Philadelphia, Pa.

Division of Ser. No. 709,863, March 4, 1968, Pat. No. 3,557,098. This application Aug. 12, 1970, Ser. No. 63,265
Int. Cl. C07c *87/28*
U.S. Cl. 260—570.8 TC **3 Claims**

7,12-Dihydropleiadenes in which the nucleus may have chloro, methyl, methoxy, methylthio or trifluoromethyl substituents and the 7-position is substituted by an aminopropylidene, aminopropyl, piperidylidene, piperidyl, pyrrolidylidene, pyrrolidyl, 2-piperidinylethylidene, 2-piperidinylethyl, 2-pyrrolidinylethylidene or 2-pyrrolidinylethyl moiety are useful as tranquilizers and antidepressants. The compounds are generally prepared by reaction of the appropriate amino Grignard reagent with a 7(12H)-pleiadenone followed by acid dehydration of the 7-hydroxy intermediate and subsequent reduction of the unsaturated derivative with phosphorus and hydroiodic acid. The 1,4-addition products also obtained via the Grignard reaction, namely 6-substituted-7(12H)-pleiadenones, are also useful as tranquilizers and antidepressants.

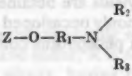
3,681,462

DIALKYLAMINOALKYL ACETYLENIC ETHERS

Carl Bordenca, Ponte Vedra Beach, Fla., assignor to SCM Corporation, Cleveland, Ohio

Filed July 31, 1969, Ser. No. 846,610
Int. Cl. C07c *91/24*, *93/10*
U.S. Cl. 260—584 C **6 Claims**

Compounds of the formula:



where Z is selected from the group consisting of alkynyl and hydroxy substituted alkynyl groups having from five to 10 carbon atoms, R_1 is lower alkylene containing from one to six carbon atoms in the alkylene group and R_2 and R_3 are like or dissimilar lower alkyl and stable salts thereof. Also described are compositions containing the compounds as well as processes for controlling arachnids.

The compounds, compositions, and processes are advantageous in that they provide effective means of controlling arachnids, such as mites, spiders, and ticks without harming human beings and animal wildlife.

3,681,463

ALKANE HYDROXY AMINES AND THE METHOD OF PREPARING THE SAME

Richard J. Lee, Park Forest, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Sept. 8, 1969, Ser. No. 856,172
Int. Cl. C07c *93/02*
U.S. Cl. 260—584 R **1 Claim**

Oil-soluble alkane hydroxy amine derivatives of alkenes containing at least ten carbon atoms, particularly low molecular weight unsaturated polymers of propene and butene, are useful as chemical intermediates and as additives in petroleum products. The amine derivatives are produced by nitrating the alkene with nitrogen tetraoxide under non-oxidizing conditions to form the corresponding nitro-nitrito alkane and reducing the nitro-nitrito alkane with hydrogen in the presence of a metallic hydrogenation catalyst.

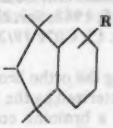
3,681,464

SATURATED INDANE DERIVATIVES AND PROCESSES FOR PRODUCING SAME

Ernst T. Theimer, Rumson, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed Aug. 18, 1969, Ser. No. 851,048
Int. Cl. C07c *49/27*
U.S. Cl. 260—586 R **3 Claims**

Saturated indane derivatives having the formula



wherein R is a carbonyl oxygen, a hydroxy group, an acyloxy group, or an alkyloxy group; perfume compositions containing such indane derivatives; and process for producing same.

3,681,465

PROCESS OF PRODUCING ALDEHYDES USING A CATALYST INCLUDING A GROUP VIII METAL AND PHOSPHORUS

Jurgen Falbe, Dinslaken; Hans Tummes, Oberhausen-Sterkrade-Nord, and Jurgen Weber, Oberhausen-Holten, all of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen-Holten, Germany

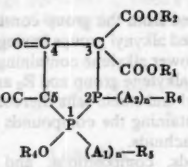
Filed Nov. 1, 1968, Ser. No. 772,612

Claims priority, application Germany, Nov. 7, 1967, P 16 68 622.9; Austria, Sept. 2, 1968, A 8496/68

Int. Cl. C07c *45/08, 45/10*; C07f *9/28*

U.S. Cl. 260—604 HF **26 Claims**

In the production of aldehydes by reaction of carbon monoxide, hydrogen, and olefinically unsaturated compounds, utilizing a catalyst based on a Group VIII metal, e.g. cobalt, which catalyst includes as an additive, a phosphorus compound, the performance of the catalyst is improved, particularly in that high yields are obtained without the increase of reaction time commonly occasioned by use of a phosphorus compound, by using a phosphorus compound of the formula, for example:



wherein R_1, R_2, R_3, R_4, R_5 and R_6 are the same or different non-substituted or substituted aliphatic, cycloaliphatic, heterocyclic or aromatic radicals, A_1 and A_2 represent similar or different bridge atoms selected from the group comprising oxygen, sulfur, nitrogen and phosphorus and *n* is an integer having a value of 0 or 1 and even 2 if the bridge atom is sulfur, nitrogen or phosphorus.

3,681,466

CONTINUOUS PRODUCTION OF AXEROPHTHOL

Horst Pommer; Bernhard Seld, both of Ludwigshafen; Axel Nuerrenbach, Gruenstadt; Georg Klotmann, Ludwigshafen, and Hans Grassner, Hidelberg, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Akteingesellschaft, Ludwigshafen/Rhine, Germany

Filed Sept. 23, 1969, Ser. No. 860,438

Claims priority, application Germany, Sept. 24, 1968, P 17 93 479.1

Int. Cl. C07c *29/00, 33/00*

U.S. Cl. 260—617 A **7 Claims**

Continuous production of axerophthol by reaction of axerophthyl acetate with a lower alcohol using guanidine as transesterification catalyst in two stages, alkyl acetate and some of the excess alcohol being distilled off in the first stage and the remainder of the alcohol being removed in the second stage by distillation with a hydrocarbon as entrainer.

3,681,467

BROMOPHENOL ISOMERIZATION

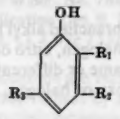
Edward John O'Bara, Manville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed April 25, 1968, Ser. No. 724,282

Int. Cl. C07c *39/26*

U.S. Cl. 260—623 R **10 Claims**

A process for enriching the ortho bromo isomer content of a phenolic material characterized by the presence of at least one brominated phenol and a bromine content of less than two atoms of bromine for each of phenolic nucleus. The phenolic material may particularly consist of at least one monobrominated and/or dibrominated product of a compound of the formula:



wherein R_1, R_2 and R_3 are hydrogen or primary or secondary alkyl groups containing one to four carbon atoms. The process is characterized by isomerization and/or disproportionation of the starting material in the presence of hydrogen bromide and an inert solvent, (such as a chlorinated hydrocarbon or a nitro aromatic hydrocarbon), at a temperature in the range −25° to 60° C. for a period of time sufficient to obtain a high concentration of the desired ortho bromo isomer. The isomerization of the bromination products of m-cresol to obtain 6-bromo-m-cresol is particularly described.

3,681,468

PROCESS FOR THE PRODUCTION OF HALOGENATED ALCOHOLS

Robert M. Thomas, and Robert P. Levek, both of W. Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Filed March 17, 1970, Ser. No. 20,404

Int. Cl. C07c *31/34*

U.S. Cl. 260—633 **11 Claims**

An improved process for the production of a halogenated alcohol from an unsaturated alcohol and bromine which involves reacting the alcohol and bromine in aqueous lithium bromide of particular concentration, separating the product from the reaction medium, removing entrained lithium bromide from the product, and recycling the lithium bromide to the reaction.

3,681,469

STABILIZATION OF 1,1,1-TRICHLOROETHANE

Wesley L. Archer, Midland, and Elbert L. Simpson, Auburn, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 21, 1970, Ser. No. 74,154

Int. Cl. C07c *17/42, 17/40*

U.S. Cl. 260—652.5 R **1 Claim**

The reaction of 1,1,1-trichloroethane with metals in inhibited by the presence in the 1,1,1-trichloroethane of a small amount of benzyl fluoride and/or benzotrifluoride.

3,681,470

ACID ISOMERIZATION OF THUJOPSENE AND NOVEL TRICYCLIC OLERINIC C15 H24 HYDROCARBONS FORMED THEREBY

Garry C. Kitchens, Wayne; Alan R. Hochstetler, Bloomfield, and Kent Kaiser, Pequannock, all of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed Jan. 18, 1971, Ser. No. 107,498

Int. Cl. C07c *13/30, 13/48*

U.S. Cl. 260—666 PY **10 Claims**

Thujopsene and thujopsene isomers derived from hibawood oil and American cedarwood oil when treated with substantially anhydrous protonating acids, suitably in the presence of an alkanoic acid containing from two to six carbon atoms, are isomerized to give a mixture of hydrocarbons including substantial amounts of alpha- and beta- chamigrenes and novel $C_{15}H_{24}$ olefinic hydrocarbons rich in 6,8a-ethano-1,1,6-trimethyl-1,2,3,5,6,7,8,8a-octahydronaphthalene. These products are useful as intermediates in the preparation of compounds valuable in perfume compounding.

3,681,471

PRODUCTION OF 1,3-ALKADIENES

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Feb. 10, 1970, Ser. No. 10,274
Int. Cl. C07c 1/20, 11/12; C07d 7/00
U.S. Cl. 260—681 7 Claims

A 3,6-dihydro-2-[H] pyran, which is substituted with 1 or 2 hydrocarbyl groups in the 3 position or with 1 hydrocarbyl group in the 5 position, is converted, at temperatures in the range of 400°–1,000° F., to a 1,3-alkalidene.

3,681,472

SHAPED STRUCTURES

Saunders E. Jamison, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 759,791, Sept. 13, 1968, which is a continuation of Ser. No. 611,468, Jan. 24, 1967, which is a continuation of Ser. No. 364,439, April 10, 1964, which is a division of Ser. No. 62,534, Oct. 4, 1968, Pat. No. 3,231,543. This application March 10, 1971, Ser. No. 123,016
Int. Cl. C08g 45/04
U.S. Cl. 260—836 4 Claims

This application discloses a process of preparing a self-supporting shaped structure which comprises polymerizing a solid phase monomer in the presence of a fluid catalyst. Specifically, trioxane is mixed with a resinous binder and then polymerized in the presence of boron fluoride. Also disclosed is the copolymerization of trioxane with diepoxides.

3,681,473

LACTAM POLYMERIZATION WITH N-SUBSTITUTED NYLON-1 INITIATOR

Sui-Wu Chow, Somerville; Markus Matzner, Edison, and James E. McGrath, Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 21,356, March 20, 1970, abandoned. This application April 23, 1971, Ser. No. 136,974
Int. Cl. C08g 41/04, 22/00
U.S. Cl. 260—857 TW 10 Claims

Certain N-substituted nylon-1 compounds are utilized as non-toxic polymerization initiators or activators with alkaline catalyst in the anionic polymerization of lactam monomer so as to provide for a rapid polymerization process wherein polymerization conditions are more readily controlled due to the gradual development of exotherms.

3,681,474

ELECTRICAL SUBSTRATES

Louis J. Lombardi, Roselle; Roy J. Coyne, Oak Lawn, and Charles E. Green, Brookfield, all of Ill., assignors to The Richardson Company, Cook County, Ill.

Filed Sept. 12, 1969, Ser. No. 857,571
Int. Cl. C08f 29/12, 33/08
U.S. Cl. 260—876 B 5 Claims

A circuit board with hydrocarbon substrate based on a polymer of a C_4 to C_6 conjugated diene with more than 50 percent of its unsaturation being 1, 2 is improved by the combination of a second hydrocarbon polymer with lower amounts of 1, 2 unsaturation and correspondingly higher amounts of 1, 4 unsaturation.

3,681,475

THERMOPLASTIC MOLDING COMPOSITIONS

Allan John Spilner, Gladwyne, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 6, 1969, Ser. No. 864,148
Int. Cl. C08d 9/10; C08f 37/18; C08g 41/04
U.S. Cl. 260—876 R 10 Claims

Rigid acrylic thermoplastic molding compositions are provided with improved extensibility and processability. The molding compositions comprise acrylic thermoplastic polymer modified with up to 5 percent elastomer. Preferred are durable compositions comprising acrylic polymers modified with acrylic elastomers.

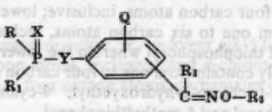
3,681,476

OXIME CARBAMATE PHOSPHATE, PHOSPHONATE, PHOSPHINATE AND PHOSPHOROAMIDATES

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

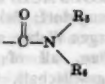
Division of Ser. No. 730,588, May 20, 1968, abandoned, which is a continuation-in-part of Ser. No. 646,467, June 16, 1967, abandoned. This application June 25, 1970, Ser. No. 49,936
Int. Cl. C07f 9/32; A01n 9/36
U.S. Cl. 260—926 5 Claims

Oxime carbamate phosphates, phosphonates, phosphinates and phosphoroamidates having the general formula:

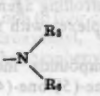


in which X and Y are independently selected from the group consisting of oxygen and sulfur; R is selected from the group lower alkyl or lower alkoxy, having from one to six carbon atoms inclusive; R_1 is selected from the group consisting of lower alkyl or lower alkoxy having from one to six carbon atoms, inclusive, amino, lower alkyl-substituted amino and phenyl; Q is selected from the group consisting of divalent tetramethylenediene-1,3, lower alkoxy or lower alkyl having from one to four carbon atoms inclusive, each, nitro, halogen and combinations thereof, and lower dialkyl-substituted thionophosphoryloxy; R_2 is selected from the the group consisting of hydrogen, lower alkyl having from one to four carbon atoms, and phenyl; and R_3 is selected from the group consisting of hydrogen; substituted carbonate and thiocarbonates of the type

in which Z is oxygen or sulfur, R_4 is lower alkyl having from one to four carbon atoms, inclusive, and β-chloro-loweralkyl having from two to four carbon atoms; carbamates of the type



in which R_5 and R_6 are independently selected from the group consisting of hydrogen, alkyl having from one to ten carbons, inclusive, substituted alkyl having one to six carbon atoms inclusive, said substituents selected from the group consisting of hydroxy, halogen, amino, di-lower-alkyl amino, lower alkoxy, and tetrahydrofuryl; lower alkenyl having from two to four carbons, inclusive, carboalkoxy alkyl having a total of from three to eight carbon atoms, inclusive, cycloalkyl having from three to six carbon atoms, inclusive, piperazino, 2-thiazolyl, phenyl, naphthyl, substituted phenyl wherein said substituents are selected from the group consisting of halogen, lower alkyl, lower alkoxy, lower thioalkyl, lower dialkylamino in which said lower alkyl and lower alkoxy moieties have from one to four carbon atoms, inclusive, nitro, cyano, trifluoromethyl, and combinations thereof; and in which



is an N-containing heterocyclic member selected from the group consisting of morpholino, piperazino, pyrrolidino, piperidino, hexamethyleneimino, pyrryl, indolyl, imidazolyl, benzimidazolyl, pyrazolyl, 1,3-oxazolidino, and 1,3-thiazolidino; esters of the type

wherein R_7 is selected from the group consisting of alkyl having from one to eight carbons inclusive, trichloromethyl, and lower alkenyl having from two to four carbon atoms, inclusive, and the radical $-(CH_2)_m-SR$ in which m is 1 or 2, R is alkyl having one to six carbon atoms, alkenyl having two to four carbon atoms, phenyl, substituted phenyl in which said substituents are selected from the group halogen, lower alkyl having one to four carbon atoms, inclusive, and lower alkoxy having one to four carbon atoms, inclusive; lower alkyl sulfonato having from one to six carbon atoms, inclusive; lower alkyl substituted thiophosphoryl wherein the lower alkyl groups independently contain from one to four carbon atoms, inclusive, and 2,2,2-trichloro-1-hydroxyethyl, 4-cyanophenyl, 2,4,5-trichlorophenyl and 4-methylthiophenyl.

The compounds are useful are insecticides, animal contact and systemic parasiticides, herbicides and foliar fungi protectants. Representative compounds are: 3-[0,0-diethylphosphorothioyl] benzaldoxime; 3-[O-(O,O-diethylphosphorothioyl)]benzaldoximino-N'-methyl carbamate; 4[O-O,O-diethylphosphorothioyl)]-acetophenone oxime; 4-[0,0-diethylphosphorothioyl)]-acetophenoneoximino-N'-methyl carbamate; and 4-(0,0-diethylphosphorothioyl)-acetophenoneoximino acetate; 4-[0-(0,0-Diethylphosphorothioyl)]-benzaldoximino-N'-morpholinyl carbamate; 4-[O-(O,O-Diethylphosphorothioyl)]-benzaldoximino-N'-piperidyl carbamate; 4-[O,O-Diethylphosphorothioyl)]-benzaldoximino-N'-azepinocarbamate; O-Ethyl-O-[4-(N'-methylcarbamyl-oximino)phenyl]-N-methylamido phosphorothioate; 4-[O,O-Diethylphosphorothioyl)]-benzaldoximino-N'-(β-N'', N''carbamate.

3,681,477

CYCLIC PHOSPHOROUS ACID ESTERS AND PROCESS

Gunter Bergerhoff, Lengsdorf; Bela Tihanyi, Bonn; Jurgen Falbe, Dinslaken; Jurgen Weber, and Werner Weisheit, both of Oberhausen-Holten, all of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen-Holten, Germany

Filed Nov. 1, 1968, Ser. No. 772,841

Claims priority, application Germany, Nov. 7, 1967, P 16 68 623.0; Austria, July 15, 1968, A 6801/68

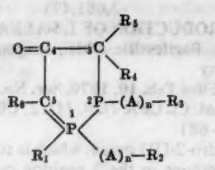
Int. Cl. C07f 9/28

U.S. Cl. 260—927 R **20 Claims**

Novel organic phosphorus compounds containing at least one phosphorus atom, which may be present in the trivalent state, at least two carboxylic acid ester groups and a phosphorus to carbon double linkage prepared by reacting a malonic acid diester with a compound of trivalent phosphorus having directly linked to the phosphorus atom at least two halogen atoms capable of reacting with activated hydrogen atoms. (The reaction malonic acid diethyl ester with phenyl phosphine dichloride and the resulting reaction product are not within the scope of the instant invention).

The novel organic phosphorus compounds of the invention are useful as pest controlling agents, as catalyst components and for forming complexes with transition metals and their compounds.

The disclosed compounds include derivatives of 1,2-diphosphacyclopentene-(5)-one-(4) having the formula:



wherein R_1 represents an aliphatic, cycloaliphatic, heterocyclic or aromatic radical linked to the nucleus via an oxygen atom, R_2 and R_3 each represent aliphatic, cycloaliphatic, heterocyclic or aromatic radicals, which may be linked to the nucleus via a bridge atom A selected from the group of oxygen, sulfur, nitrogen, and phosphorus, n is an integer having a value of 0 or 1 if the bridge atom is oxygen and if the bridge atom is sulfur, nitrogen or phosphorus n has a value of 0, 1 or 2, and R_4, R_5 and R_6 each stand for a carboxylic acid ester group.

3,681,478

OXIME CARBAMATE PHOSPHATE, PHOSPHONATE, PHOSPHINATE AND PHOSPHOROAMIDATES

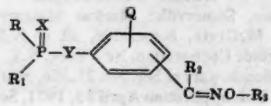
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 730,588, May 20, 1968, abandoned, which is a continuation-in-part of Ser. No. 646,467, June 16, 1967, abandoned. This application June 25, 1970, Ser. No. 49,935

Int. Cl. C07f 9/32; A01n 9/36

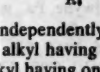
U.S. Cl. 260—944 **7 Claims**

Oxime carbamate phosphates, phosphonates, phosphinates and phosphoramidates having the general formula:



in which X and Y are independently selected from the group consisting of oxygen and sulfur; R is selected from the group lower alkyl or lower alkoxy, having from one to six carbon atoms inclusive; R_1 is selected from the group consisting of lower alkyl or lower alkoxy having from one to six carbon atoms, inclusive, amino, lower alkyl-substituted amino and phenyl; Q is selected from the group consisting of divalent tetramethylenediene-1,3, lower alkoxy or lower alkyl having from one to four carbon atoms inclusive, each, nitro, halogen and combinations thereof, and lower dialkyl-substituted thionophosphoryloxy; R_2 is selected from the group consisting of hydrogen, lower alkyl having from one to four carbon atoms, and phenyl; and R_3 is selected from the group consisting of hydrogen; substituted carbonate and thiocarbonates of the type

in which Z is oxygen or sulfur, R_4 is lower alkyl having from one to four carbon atoms, inclusive, and β-chloro-loweralkyl having from two to four carbon atoms; carbamates of the type



in which R_5 and R_6 are independently selected from the group consisting of hydrogen, alkyl having from one to 10 carbons, inclusive, substituted alkyl having one to six carbon atoms inclusive, said substituents selected from the group consisting of hydroxy, halogen, amino, di-lower-alkyl amino, lower alkoxy, and tetrahydrofuryl; lower alkenyl having from two to four carbons, inclusive, carboalkoxy alkyl having a total of from 3

to 8 carbon atoms, inclusive, cycloalkyl having from three to six carbon atoms, inclusive, piperazino, 2-thiazolyl, phenyl, naphthyl, substituted phenyl wherein said substituents are selected from the group consisting of halogen, lower alkyl, lower alkoxy, lower thioalkyl, lower dialkylamino in which said lower alkyl and lower alkoxy moieties have from one to four carbon atoms, inclusive, nitro, cyano; trifluoromethyl, and combinations thereof; and in which

is an N-containing heterocyclic member selected from the group consisting of morpholino, piperazino, pyrrolidino, piperidino, hexamethyleneimino, pyrryl, indolyl, imidazolyl, benzimidazolyl, pyrazolyl, 1,3-oxazolidino, and 1,3-thiazolidino; esters of the type

wherein R_7 is selected from the group consisting of alkyl having from one to eight carbons inclusive, trichloromethyl, and lower alkenyl having from two to four carbon atoms, inclusive, and the radical $R_8-(CH_2)_m-SR_9$ in which m is 1 or 2, R_8 is alkyl having one to six carbon atoms, alkenyl having two to four carbon atoms, phenyl, substituted phenyl in which said substituents are selected from the group halogen, lower alkyl having one to four carbon atoms, inclusive, and lower alkoxy having one to four carbon atoms, inclusive; lower alkyl sulfonato having from one to six carbon atoms, inclusive; lower alkyl substituted thiophosphoryl wherein the lower alkyl groups independently contain from one to four carbon atoms, inclusive, and 2,2,2-trichloro-1-hydroxyethyl, 4-cyanophenyl, 2,4,5-trichlorophenyl and 4-methylthiophenyl.

The compounds are useful as insecticides, animal contact and systemic parasiticides, herbicides and foliar fungi protectants. Representative compounds are: 3-[0,0-diethylphosphorothioyl]benzaldoxime; 3-[0-(0,0-diethylphosphorothioyl)]benzaldoximino-N'-methyl carbamate; 4[0-0,0-diethylphosphorothioyl)]-acetophenone oxime; 4-[0,0-diethylphosphorothioyl)]-acetophenoneoximino-N'-methyl carbamate; and 4-(0,0-diethylphosphorothioyl)-acetophenoneoximino acetate; 4-[0-(0,0-Diethylphosphorothioyl)]-benzaldoximino-N'-morpholinyl carbamate; 4-[0-(0,0-Diethylphosphorothioyl)]-benzaldoximino-N'-piperidyl carbamate; 4-[0,0-Diethylphosphorothioyl)]-benzaldoximino-N'-azepinocarbamate; 0-Ethyl-O-[4-(N'-methylcarbamyl-omimino)phenyl]-N-methylamido phosphorothioate; 4-[0,0-Diethylphosphorothioyl)]-benzaldoximino-N'-(β-N'', N''-diethylaminoethyl)-carbamate.

3,681,479

OXIME CARBAMATE PHOSPHATE, PHOSPHONATE, PHOSPHINATE AND PHOSPHOROAMIDATES

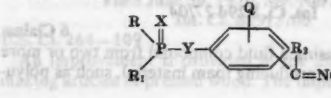
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 730,588, May 20, 1968, abandoned, which is a continuation-in-part of Ser. No. 646,467, June 16, 1967, abandoned. This application June 25, 1970, Ser. No. 49,937

Int. Cl. C07f 9/32; A01n 9/36

U.S. Cl. 260—944 **4 Claims**

Oxime carbamate phosphates, phosphonates, phosphinates and phosphoroamidates having the general formula:



in which X and Y are independently selected from the group consisting of oxygen and sulfur; R is selected from the group lower alkyl or lower alkoxy, having from one to six carbon atoms inclusive; R_1 is selected from the group consisting of lower alkyl or lower alkoxy having from one to six carbon atoms, inclusive, amino, lower alkyl-substituted amino and phenyl; Q is selected from the group consisting of divalent tetramethylenediene-1, 3, lower alkoxy or lower alkyl having from one to four carbon atoms inclusive, each, nitro, halogen and combinations thereof, and lower dialkyl-substituted thionophosphoryloxy; R_2 is selected from the group consisting of hydrogen, lower alkyl having from one to four carbon atoms, and phenyl; and R_3 is selected from the group consisting of hydrogen; substituted carbonate and thiocarbonates of the type

in which Z is oxygen or sulfur, R_4 is lower alkyl having from one to four carbon atoms, inclusive, and β-chloro-loweralkyl having from two to four carbon atoms; carbamates of the type

in which R_5 and R_6 are independently selected from the group consisting of hydrogen, alkyl having from one to 10 carbons, inclusive, substituted alkyl having one to six carbon atoms inclusive, said substituents selected from the group consisting of hydroxy, halogen, amino, di-lower-alkyl amino, lower alkoxy, and tetrahydrofuryl; lower alkenyl having from two to four carbons, inclusive, carboalkoxy alkyl having a total of from three to eight carbon atoms, inclusive, cycloalkyl having from three to six carbon atoms, inclusive, piperazino, 2-thiazolyl, phenyl, naphthyl, substituted phenyl wherein said substituents are selected from the group consisting of halogen, lower alkyl, lower alkoxy, lower thioalkyl, lower dialkylamino in which said lower alkyl and lower alkoxy moieties have from one to four carbon atoms, inclusive, nitro, cyano, trifluoromethyl, and combinations thereof; and in which

is an N-containing heterocyclic member selected from the group consisting of morpholino, piperazino, pyrrolidino, piperidino, hexamethyleneimino, pyrryl, indolyl, imidazolyl, benzimidazolyl, pyrazolyl, 1,3-oxazolidino, and 1,3-thiazolidino, esters of the type

wherein R_7 is selected from the group consisting of alkyl having from one to eight carbons inclusive, trichloromethyl, and lower alkenyl having from two to four carbon atoms, inclusive, and the radical $-(CH_2)_m-SR$ in which m is 1 or 2, R is alkyl having one to six carbon atoms, alkenyl having two to four carbon atoms, phenyl, substituted phenyl in which said substituents are selected from the group halogen, lower alkyl having one to four carbon atoms, inclusive, and lower alkoxy having one to four carbon atoms, inclusive; lower alkyl sulfonato having from one to six carbon atoms, inclusive; lower alkyl substituted thiophosphoryl wherein the lower alkyl groups independently contain from one to four carbon atoms, inclusive, and 2,2,2-trichloro-1-hydroxyethyl, 4-cyanophenyl, 2,4,5-trichlorophenyl and 4-methylthiophenyl.

The compounds are useful as insecticides, animal contact and systemic parasiticides, herbicides and foliar fungi protectants. Representative compounds are: 3-[O,O-diethylphosphorothioyl] benzaldoxime; 3-[O-(0,0-diethylphosphorothioyl)]benzaldoximino-N'-methyl carbamate, 4[O-O,O-diethylphosphorothioyl)]-acetophenone oxime; 4-[O,O-diethylphosphorothioyl)]-acetophenoneoximino-N'-methyl carbamate; and 4-(O,O-diethylphosphorothioyl)-acetophenoneoximino acetate; 4-[O-(O,O-Diethylphosphorothioyl)]-benzaldoximino-N'-morpholinyl carbamate; 4-[O-(O,O-Diethylphosphorothioyl)] -benzaldoximino-N'-piperidyl carbamate; 4-[O,O-Diethylphosphorothioyl)]-benzaldoximino-N'-azepinocarbamate; 0-Ethyl-0-[4-(N'-methylcarbamyl-oximino)phenyl]-N-methylamido phosphorothioate; 4-[O,O-Diethylphosphorothioyl)]-benzaldoximino-N'-(β-N'', N''-diethylaminoethyl)-carbamate.

3,681,480
ADAMANTYL AND ADAMANTYLALKYL 2-AMINOETHYL PHOSPHATES, PHOSPHONATES AND PHOSPHINATES

Francis R. Pfeiffer, Cinnaminson, N.J., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed April 2, 1971, Ser. No. 130,812
Int. Cl. C07f 9/08, 9/28; A61k 24/00
U.S. Cl. 260—944 **4 Claims**

The compounds are adamantyl and adamantylalkyl 2-aminoethyl phosphates, phosphonates and phosphinates having renin inhibitory activity.

3,681,481
CATALYTIC ADDITION OF COMPOUNDS HAVING A P-H BOND TO ACETYLENE

Kingso Lin, Chingtsung, Newark, Ohio, assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Nov. 12, 1969, Ser. No. 876,140
Int. Cl. C07f 9/40, 9/00
U.S. Cl. 260—970 **8 Claims**

Compounds containing a P-H bond add to acetylene in the presence of metal coordinating catalysts selected from groups VIA and VIII of the periodic table, to produce saturated organophosphorus compounds in good yields. The saturated organo-phosphorus compounds find utility as stabilizers, plasticizers and flame retardant additives for organic polymers, lubricating oils and hydraulic fluids.

3,681,482
COLOR IMPROVEMENT OF PHOSPHATE ESTERS

Vithal C. Patel, Glen Burnie, and Edward F. Orwoll, Baltimore, both of Md., assignors to FMC Corporation, New York, N.Y.

Filed Feb. 4, 1970, Ser. No. 8,689
Int. Cl. C07f 9/08, 9/12
U.S. Cl. 260—989 **6 Claims**

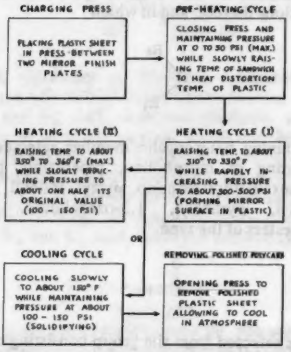
A process for the permanent removal of color from phosphate esters of alkylphenols which either are colored or become colored on storage by simultaneously bleaching and color-stabilizing the phosphate esters with sodium borohydride or lithium borohydride.

3,681,483
PRESSURE POLISHING OF EXTRUDED POLYCARBONATE OR POLYSULFONE SHEET

Richard E. Moore, R.D. 1, Locust Grove Rd., West Chester, Pa.

Filed July 13, 1970, Ser. No. 54,185
Int. Cl. B29d 11/00; B29c 3/00
U.S. Cl. 264—1 **9 Claims**

Pressure polished polycarbonate or polysulfone sheet substantially free of ripples, wiggles, extrusion die lines, and stresses and having a light transmittance greater than, a percentage haze lower than and a distortion lower than the as extruded sheet so that the polished sheet can be mechanically or thermo-formed into such articles as airplane windshields, canopies, protective headgears and see-through enclosures requiring minimal wall thickness, and a method of polishing

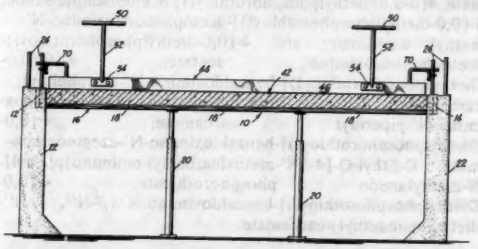

CHARGING PRESS
PLACING PLASTIC SHEET IN PRESS BETWEEN TWO MIRROR FINISH PLATES
PRE-HEATING CYCLE
CLOSING PRESS AND MAINTAINING PRESSURE AT 0 TO 30 PSI (MAX.) WHILE SLOWLY RAISING TEMP. OF SANDWICH TO HEAT DISTORTION TEMP. OF PLASTIC
HEATING CYCLE (II)
RAISING TEMP. TO ABOUT 320° TO 360° F (MAX.) WHILE SLOWLY REDUCING PRESSURE TO ABOUT ONE HALF ITS ORIGINAL VALUE (100 - 150 PSI)
HEATING CYCLE (I)
RAISING TEMP. TO ABOUT 310° TO 320° F WHILE RAPIDLY INCREASING PRESSURE TO ABOUT 300-500 PSI (FORMING MIRROR SURFACE IN PLASTIC)
OR
COOLING CYCLE
COOLING SLOWLY TO ABOUT 180° F WHILE MAINTAINING PRESSURE AT ABOUT 100 - 150 PSI (SOLIDIFYING)
REMOVING POLISHED PLASTIC
OPENING PRESS TO REMOVE POLISHED PLASTIC SHEET ALLOWING TO COOL IN ATMOSPHERE

the sheet between mirror finish plates using a combination of pre-heating to the heat distortion temperature at zero or minimal pressure, heating to higher temperatures while rapidly increasing the pressure so as to transfer the mirror finish from the plates to the sheet surfaces, and cooling the sheet while decreasing the pressure to fix the mirror finish in the sheet surfaces as the sheet contracts and solidifies.

3,681,484
METHOD FOR SURFACING POURED MATERIAL

Eugene T. McKie, Route #4, Greenview Dr., Atlanta, Ga., and John E. Hamilton, 8148 W. Concord Blvd., Jacksonville, Fla.

Continuation of Ser. No. 601,935, Dec. 15, 1966, abandoned. This application Aug. 26, 1970, Ser. No. 67,280
Int. Cl. E04b 1/16
U.S. Cl. 264—34 **6 Claims**



A method for surfacing poured concrete material to make a slab with less manual labor and more strength by vibrating a straight edge guided at the proper height and supported on the building structure. The apparatus comprises vibrating straight edge for surfacing low slump concrete mix with less manual effort.

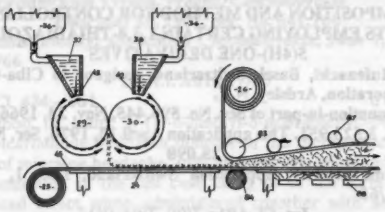
3,681,485
METHOD OF COMBINING FLUID COMPONENTS TO CONTINUOUSLY PRODUCE POLYURETHANE FORM

Abraham Buddy Lieberman, 4755 Boulevard des Grandes Prairies, St. Leonard, Montreal, Quebec, Canada

Division of Ser. No. 809,601, March 24, 1969, Pat. No. 3,590,425. This application Oct. 24, 1969, Ser. No. 869,265
Int. Cl. B29d 27/04
U.S. Cl. 264—47 **6 Claims**

Method of processing a fluid compound from two or more chemical charges for producing foam material, such as polyu-

rethane foam, for the manufacture of products having a cellular structure, which briefly consists in the metering of these chemical charges; two contra-rotating film-carrying rolls are in intimate contact with one another, each roll being in contact with one of the two chemical charges, which are located in their respective receptacles, picks up or is applied with films



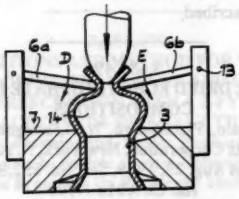
of the metered chemical charge from its receptacle and forces it into intimate contact with the films of the metered chemical charge that is applied to or picked up on the other roll and effecting a blending action therewith and then directing the reactioning foam mixture onto the surface of a moving paperboard or other casting surface.

3,681,486

METHOD FOR THE PRODUCTION OF BOTTLES OR THE LIKE BY BLOW MOLDING

Gottfried Mehnert, Berlin-Mariendorf, Germany, assignor to Conduco A.G., Zug, Switzerland

Filed Aug. 4, 1969, Ser. No. 847,369
Claims priority, application Germany, Aug. 5, 1968, P 17 79 384.9
Int. Cl. B29c *17/07*
U.S. Cl. 264—89 8 Claims



The sections of an open-and-shut mold in a blow molding apparatus carry clamping elements which engage the parison during closing of the mold to form in the parison a constriction and to support the blank which is obtained on severing of the parison. The blowing mandrel thereupon expands the blank directly below the constriction so that the blank engages the jaws at the upper end of the mold before the blank is fully expanded in response to admission of gas through the mandrel. The mandrel can pivot the clamping elements away from engagement with the blank or the apparatus comprises separate motors which move the clamping elements in synchronism with movements of the mold sections. The clamping elements can move the blank away from the die of the extruder prior to or during closing of the mold.

3,681,487

METHOD OF PREPARING ARTICLES OF PRESSED WOOD

Alfred Shaines, Fanwood, N.J., assignor to American Standard Inc., New York, N.Y.

Continuation-in-part of Ser. No. 735,167, June 7, 1968, abandoned
Filed June 30, 1970, Ser. No. 51,351
Int. Cl. B29j *5/00*
U.S. Cl. 264—109 6 Claims

An improvement is provided in the ammonia process for making articles of pressed wood. The improvement comprises post heating the pressed wood article in a heating zone for a sufficient period of time at temperatures of at least 125° F. to impart an increase in the modulus of rupture and a decrease in water absorption to said pressed wood article.

3,681,488

A MELT EXTRUDING PROCESS COMPRISING A TRIOXANE MONOMER AND A POLYMERIC BINDER

Saunders Eliot Jamison, Summit, N.J., assignor to Celanese Corporation of America, New York, N.Y.

Continuation of Ser. No. 508,885, Oct. 20, 1965, abandoned, Division of Ser. No. 62,534, Oct. 14, 1960, Pat. No. 3,234,543.
This application Oct. 2, 1969, Ser. No. 863,767
Int. Cl. B28b *3/20*
U.S. Cl. 264—176 4 Claims

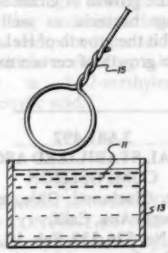
A filament and film forming process in which a monomer stream comprising at least 50 percent trioxane and a polymeric binder of either polyvinylacetate or polyacetaldehyde is melt extruded; solidified by cooling; and the trioxane polymerized in the presence of a gasiform polymerization catalyst.

3,681,489

METHOD OF FORMING FILMS

Thomas R. Ford, Torrance, and Edward T. Martin, III, Manhattan Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 22, 1970, Ser. No. 4,797
Int. Cl. B29c *25/00*
U.S. Cl. 264—307 8 Claims



A method of forming free-standing film and film forming compositions utilized therefor which comprise a first aqueous solution of an alkali metal alginate and surface active agent. This first solution will form an initial water soluble film which is then subsequently dipped in a second solution comprised of an aqueous solution of a salt of a multivalent metallic ion to produce a set insoluble film.

3,681,490

ARTIFICIAL INSEMINATION OF PIGS

David R. Melrose, Reading; Ronald Lowdon Stralton Patterson, Crickham near Wedmore, and Hugh Charles Reed, Brent of Selby, all of England, assignors to Nationale Research Development Corporation, London, England

Filed July 22, 1969, Ser. No. 843,789
Int. Cl. A61k *27/00*
U.S. Cl. 424—2 19 Claims

A process for the artificial insemination of female pigs, which comprises the step of introducing into the environment of the female pig immediately prior to testing for oestrus response at least one compound selected from 5α-androst-16-en-3-one and 3α-hydroxy-5α-androst-16-ene. In a preferred process the compound is administered in the form of a spray of liquid droplets bearing the steroid compound.

3,681,491

BLEOMYCIN AND PROCESSES FOR THE PREPARATION THEREOF

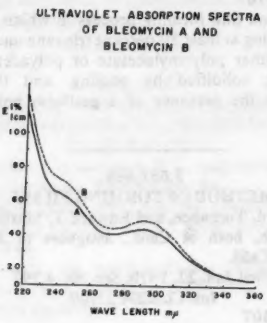
Hamao Umezawa, 23 Kita-4-chome Toyotama, Nerima-ku, Tokyo; Kenji Maeda, 258 Gotanda-1-chome, Shinagawa-ku, Tokyo; Yoshiro Okami, 18-3 Denenchofu-6, and Tomio Takeuchi, 273 Imaizumicho, both of Ota-ku, Tokyo, all of Japan

Continuation-in-part of Ser. No. 345,233, Feb. 17, 1964, abandoned. This application Dec. 3, 1965, Ser. No. 511,448

Claims priority, application Japan, March 5, 1963, 38/10177

Int. Cl. A61k *21/00*

U.S. Cl. 424—115 7 Claims



An antibiotic complex designated bleomycin was produced by fermentation of *Streptomyces verticillus* A.T.C.C. 15003 and found to inhibit the growth of Gram-negative and Gram-positive and acid-fast bacteria as well as certain plant pathogens and to inhibit the growth of HeLa cells in tissue culture and to inhibit the growth of certain experimental tumors in mice.

3,681,492

BACTERICIDAL STABILIZED ASCORBIC ACID COMPOSITION

Judith M. Kotzbauer, Cincinnati, Ohio, assignor to Allergan Pharmaceuticals, Santa Ana, Calif.

Continuation of Ser. No. 526,339, Feb. 10, 1966, abandoned, which is a continuation-in-part of Ser. No. 383,495, July 17, 1964, abandoned. This application Oct. 30, 1969, Ser. No. 871,769

Int. Cl. A611 *13/00, 23/00*

U.S. Cl. 424—141 1 Claim

Microbially active aqueous solutions of an ascorbic acid material have been prepared which have a prolonged microbicidal life. The aforesaid aqueous solution initially contains very small amounts of cupric ion (or sometimes cuprous ion), on the order of 25 to 50 micrograms per milliliter of aqueous solution, in the presence of at least a sufficient amount of a water-soluble amine or water-soluble ammonium salt, to complex the copper ions present, the first log stability constant (k_1) of the copper-amine complex and the copper-ammonium complex so formed in the aqueous solution lying in the range of between about 3 to 14 at a pH of beteween about 5 to 8.

3,681,493

ANTIBACTERIAL COMPOSITIONS

Gareth Morse Davies, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 28, 1970, Ser. No. 76,215

Claims priority, application Great Britain, Oct. 14, 1969, 50,469/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—185 7 Claims

The invention provides pharmaceutical and veterinary compositions including as active ingredient a known derivative of di-(2-thienyl)borinic acid or phenyl-2-thienylborinic acid, for use in the treatment of bacterial infections, particularly those caused by Gram-negative bacteria.

3,681,494

COMPOSITION AND METHOD FOR CONTROLLING PESTS EMPLOYING CERTAIN 1,3,4-THIADIAZOLE-5(4H)-ONE DERIVATIVES

Kurt Rufenacht, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

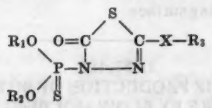
Continuation-in-part of Ser. No. 596,445, Nov. 23, 1966, Pat. No. 3,523,951. This application April 13, 1970, Ser. No. 28,098

Claims priority, application Switzerland, Dec. 1, 1965, 16577/65

Int. Cl. A01n *7/00, 7/04, 9/21*

U.S. Cl. 424—200 27 Claims

Pesticidal compositions are disclosed which contain as active ingredients 1,3,4-thiadiazole-5(4H)-one derivatives of the formula



wherein

R_1 and R_2 each represent lower alkyl,

R_3 represents lower alkyl optionally substituted by lower alkoxy or lower alkylthio, and

X represents oxygen or sulphur;

these compositions are useful as soil disinfectant and for controlling insects, spiders, soil fungi and nematodes.

Methods for the disinfection of soil and for controlling said pests are also described.

3,681,495

FREEZE DRIED ECHOTHIOPHATE IODIDE COMPOSITIONS

Anwar A. Hussain, Plattsburgh, N.Y., assignor to American Home Products Corporation, New York, N.Y.

Filed Aug. 25, 1969, Ser. No. 852,882

Int. Cl. A01n *17/00*

U.S. Cl. 424—211 2 Claims

A process for producing echothiophate iodide of satisfactory stability so that potency is retained upon storage which involves freeze drying a solution of echothiophate iodide in a suitable solvent, for example water. It is preferred to have potassium acetate present during the lyophilization as the presence of this salt as a co-drying agent results in an echothiophate iodide product of very high stability. Under certain circumstances other co-drying agents may be present either in place of, or along with, the potassium acetate.

3,681,496

BACTERIOSTAT AND FUNGISTAT COMPOSITIONS CONTAINING N,S-HETEROCYCLIC COMPOUNDS

Rudolph Junghahnel, Witten-Bommern; Gustav Renckhoff, Witten-Ruhr, and Klaus Thewalt, Witten-Ruhr, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed July 16, 1968, Ser. No. 745,087

Claims priority, application Germany, July 20, 1962, D 53635

Int. Cl. A01n *9/12*

U.S. Cl. 424—246 7 Claims

The use of Δ^2-thiazolines and 4,5-dihydro-1,3-thiazines as bacteriostats and fungistats. Used alone or with a carrier, they are effective in inhibiting the growth of bacteria and fungi. The N,S-heterocyclics are especially effective against gram-positive bacteria.

3,681,497

THERAPEUTIC METHODS OF EMPLOYING HYDROGEN MALEATE SALT OF N-(D-6-METHYL-8-ISOERGOLENYL)-N',N'-DIETHYL-CARBAMIDE

Miroslav Semonsky, and Viktor Zikan, both of Prague, Czechoslovakia, assignors to Spofa Spojene Podniky Pro Zdravotnick-ou Vyrobu, Prague, Czechoslovakia

Filed May 25, 1967, Ser. No. 641,160
Claims priority, application Czechoslovakia, June 7, 1966, 3860/66
Int. Cl. A61k 27/00
U.S. Cl. 424—261 6 Claims

Method of using N-(D-6-methyl-8-isoergolenyl)-N', N'-diethylcarbamide hydrogen maleate in the therapeutic treatment of migraine headache, urticaria, hypertension and allergic conditions, in the last case along or in the form of an enhanced effect when administered together with an antihistamine.

3,681,498

ISOTHIAZOLYL PYRIDINIUM SALTS AS HYPOGLYCEMIC AGENTS

Victor John Bauer, Montvale, and Sidney Robert Safir, River Edge, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 875,528, Nov. 10, 1969, Pat. No. 3,592,899. This application Oct. 19, 1970, Ser. No. 82,061
Int. Cl. A61k 27/00
U.S. Cl. 424—263 7 Claims

This application describes quaternary isothiazolylpyridinium salts, compositions containing quaternary isothiazolylpyridinium salts, and also the method of use of the isothiazolylpyridinium salts. These compositions are useful in warm-blooded animals for their hypoglycemic activity.

3,681,499

COMPOSITIONS AND METHOD FOR TREATING GASTRODUODENAL ULCER AND GASTRIC HYPERSECRETION WITH A 2-PYRIDYL THIOACETAMIDE OR A SALT THEREOF

Charles Malen, Fresnes, and Xavier Pascaud, Paris, both of France, assignors to Societe en nom Collectif "Science Union et Cie, Societe Francaise De Recherche Medicale", Suresnes, France

Continuation-in-part of Ser. No. 845,060, July 25, 1969, abandoned. This application March 31, 1971, Ser. No. 130,001
Int. Cl. A61k 27/00
U.S. Cl. 424—263 15 Claims

Pharmaceutical compositions containing 2-pyridyl thioacetamide and its salts and method of treating gastroduodenal ulcer and gastric hypersecretion by the same.

3,681,500

SPRAY COMPOSITIONS FOR TREATMENT OF OBSTRUCTIVE DISORDERS OF THE RESPIRATORY TRACT AND METHODS THEREFOR

Karl Zeile; Werner Schulz; Rolf Banholzer, and Helmut Wick, all of Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

Filed Dec. 3, 1970, Ser. No. 94,951
Claims priority, application Germany, Dec. 12, 1969, P 19 62 496.5
Int. Cl. A61k 27/00
U.S. Cl. 424—265 14 Claims

Inhalation spray compositions for the treatment of obstructive disorders of the respiratory tract, comprising as an active ingredient a physiologically compatible quaternary salt of N-isopropyl-N-methyl-nortropine tropic acid ester, optionally in combination with a mucolytic and/or a bronchospasmolytic.

3,681,501

PHARMACEUTICAL COMPOSITIONS AND METHODS FOR PRODUCING A DEPRESSANT EFFECT ON THE CENTRAL NERVOUS SYSTEM WITH PIPERIDYL BUTANONES

Hans Herbert Kuhnis, Engelgasse 20, Basle, and Ulrich Renner, Talweg 31, Riehen near Basle, both of Switzerland

Continuation-in-part of Ser. No. 788,069, Dec. 30, 1968, Pat. No. 3,579,512. This application Nov. 25, 1970, Ser. No. 92,906
Claims priority, application Switzerland, Jan. 11, 1968, 423/68
Int. Cl. A61k 27/00
U.S. Cl. 424—267 4 Claims

1-[1-(3-p-Fluorobenzoylpropyl)-4-(2-propinyl)-4-piperidyl]-1-butanone and a pharmaceutically acceptable acid addition salt thereof have a depressant effect on the central nervous; pharmaceutical compositions comprising such compound and a method for producing a depressant effect in mammals are provided.

3,681,502

DIURETIC AND SALURETIC COMPOSITION AND METHOD CONTAINING 5-(2-METHYLENE-ALKANOYL)-BENZOFURAN COMPOUNDS

Janos Zerginyi, Riehen, and Ernst Habicht, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 746,262, July 22, 1968, Pat. No. 3,580,931. This application Aug. 19, 1970, Ser. No. 65,343
Int. Cl. A01n 9/28; A61k 27/00
U.S. Cl. 424—285 20 Claims

A method of producing a diuretic and saluretic effect in mammals comprising administering 5-(2-methylene-alkanoyl)-benzofuran compounds to said mammals and pharmaceutical compositions containing said compounds. A typical embodiment is 5-(2-methylene-butyryl)-6-methyl-benzofuran-2-carboxylic acid.

3,681,503

METHOD FOR COMBATING DISTURBANCES OF THE LIPID CONTENT OF THE BLOOD

Antonio Esteve-Subirana, Barcelona, Spain, and Chislain Coutellier, Bruxelles, Belgium, assignors to Laboratoires OM, S.A., Geneva, Switzerland and Delalande S.A., Courbevoie, France

Filed April 17, 1970, Ser. No. 29,683
Int. Cl. A61k 27/00
U.S. Cl. 424—316 2 Claims

The diethylammonium salt of hydroquinone sulfonic acid is used against disturbances of the lipid content of the blood, and against affectations stemming from such disturbancies.

3,681,504

RUMINANT DEGLUTITION ALTERATION

Charles Johnston, and Michael D. Campbell, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 26, 1968, Ser. No. 787,220
Int. Cl. A61k 27/00
U.S. Cl. 424—326 14 Claims

A method and composition useful for altering deglutition in ruminants by closure of the esophageal groove therein are disclosed. In the method and composition, guanidine, 1-aminoguanidine, 1,3-diaminoguanidine or a pharmaceutically-acceptable salt thereof are employed to close the esophageal groove of a ruminant animal, thereby permitting orally-ingested nutrients and medicaments to bypass the reticulo-rumen.

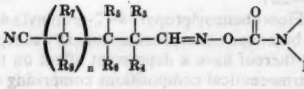
3,681,505

METHOD OF CONTROLLING INSECTS AND ACARINA WITH CYANOALKYLALDOXIME CARBAMATES

Roger Williams Addor, and David Edgar Allman, both of Pennington, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 812,325, April 1, 1969, Pat. No. 3,621,049. This application April 15, 1971, Ser. No. 134,426
Int. Cl. A01n 9/20
U.S. Cl. 424—327 4 Claims

Insecticidal and acaricidal compounds are provided having the formula:



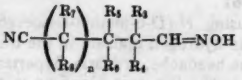
wherein:

R_1 and R_2 are each selected from the group consisting of hydrogen, lower alkyl, and allyl, provided that when either R_1 or R_2 is hydrogen, the other substituent must be lower alkyl or allyl, and

R_3, R_4, R_5, R_6, R_7, and R_8 are each selected from the group consisting of lower alkyl, hydrogen and phenyl, and

n is 0 or 1.

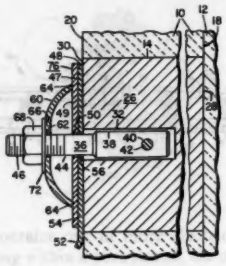
The above compounds are prepared by a variety of process routes from novel cyanoalkylaldoxime intermediates of the formula:



wherein R_3,R_4,R_5,R_6,R_7, R_8 and n are as defined above.

ELECTRICAL

3,681,506
ELECTRICAL CONNECTOR FOR REFRACTORY ELECTRODES
Yilmaz Can, Watertown, Mass., assignor to Corning Glass Works, Corning, N.Y.
Filed Sept. 20, 1971, Ser. No. 181,950
Int. Cl. C03b 5/02; H05b 3/06
U.S. Cl. 13—6 **9 Claims**

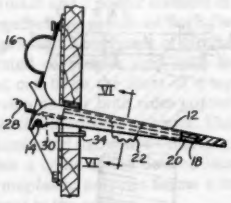


An electrical connector adapted to be secured to an exposed-to-atmosphere electrode end portion, with the connector in turn being adapted to urge one end of an electrical contact means into engagement with the electrode end face. The connector includes retainer means, pressure equalization means and resilient urging means, with the pressure equalization means and the one end of the electrical contact means substantially completely covering the electrode end face.

ERRATUM

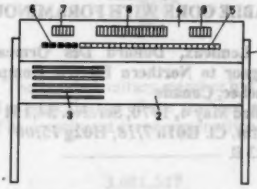
For Class 13—9 see:
Patent No. 3,680,163

3,681,507
ELECTRONIC ORGAN VOICING CONTROL MOUNTED ON VOICE TAB
Mathew A. Slaats, and James E. Blessinger, both of Jasper, Ind., assignors to Kimball Piano & Organ Co., Jasper, Ind.
Filed Jan. 6, 1971, Ser. No. 104,416
Int. Cl. G10h 1/02
U.S. Cl. 84—1.19 **6 Claims**



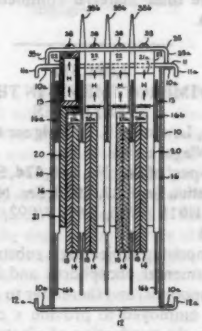
A tone quality control for an electronic organ which is carried on the voice tab which controls a respective voice of the organ. The control includes an adjustable resistor, or rheostat, adjustable for varying a quality of the sound pertaining to the respective voice, such as the volume thereof. The control is advantageously carried on the underside of the tab pertaining to the respective voice and can readily be adjusted by the organ player to control the quality of the voice to which the adjustment pertains.

3,681,508
ELECTRONIC ORGAN
Rainer Bohm, Konigsglacis 3, 495 Minden, Germany
Filed July 17, 1970, Ser. No. 55,911
Claims priority, application Germany, Sept. 30, 1969, P 19 49 313.1
Int. Cl. G10f 1/00
U.S. Cl. 84—1.03 **3 Claims**



The application describes an electronic organ in which a rhythmic production of various chords and/or individual notes is triggered whenever an individual key is depressed. This mode of operation is achieved by use of a rhythm producer, a tone generator, and appropriate switching and control apparatus.

3,681,509
BUS BAR ELECTRIC POWER DISTRIBUTION SYSTEM WITH HEAT PIPE HEAT DISSIPATING MEANS
Frank C. Johnston, and Werner A. Krause, both of Cincinnati, Ohio, assignors to General Electric Company
Filed June 28, 1971, Ser. No. 157,546
Int. Cl. H01b 7/34
U.S. Cl. 174—16 B **16 Claims**



Enclosed multi-phase power bus bar distribution apparatus made up of prefabricated ten-foot lengths or sections having joints which include closely stacked overlapping bus bar portions. Heat generated in the joint is led out of the joint by conductive heat-bleeding members which extend into close thermal contact with at least one bus bar of each phase at the overlapped portions. "Heat pipe" heat conducting members are provided in close thermal contact with portions of the heat-bleeding members and in close thermal contact with a heat-dissipating plate which dissipates heat to the ambient air. Fins are added to the heat-dissipating plate to enhance its heat dissipating ability. In another form, heat-bleeding members extend into close thermal contact with each of the bus bars of a prefabricated section intermediate the ends of the bus bars and "heat pipes" lead heat to a heat-dissipating cap plate. The heat-bleeding members and heat-pipe members are staggered or spaced along the length of the section.

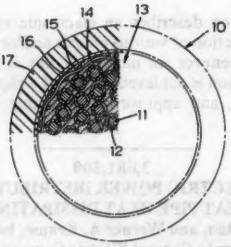
The "heat pipes" comprise elongated generally tubular, hermetically sealed enclosures, which have controlled low pressure therein. A vaporizable liquid is included which is vaporized by contact with a high temperature portion of the enclosure and is recondensed by contact with a cooler portion of the enclosure. A capillary-acting "wick" serves to return the recondensed liquid from the cooler portion to the hotter portion, thereby completing a cycle which continues to transfer heat from the hotter portion to the cooler portion.

3,681,510

FILLED CABLE CORE WITH FORAMINOUS CORE WRAP

Roger Joseph Lemieux, Dollard Des Ormeaux, Quebec, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed May 4, 1970, Ser. No. 34,151
Int. Cl. H01b 7/18; H02g 15/00
U.S. Cl. 174—23 R **8 Claims**



A multi-conductor sheathed electric cable having a core filled with foamed plastic material, in which a foraminous wrap circumscribes the insulated conductors of the core, the conductors and wrap being embedded in the foamed plastic material, and the filler material completely filling all voids within the sheath.

3,681,511

USES OF AND IMPROVEMENTS IN THE COATING OF SUBSTRATES

George T. Miller, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 860,424, Sept. 23, 1969. This application Sept. 22, 1970, Ser. No. 74,501
Int. Cl. H01b 11/06; B44d 1/092; C23c 3/02
U.S. Cl. 174—36 **13 Claims**

A process comprising subjecting a substrate to a member of the group of elemental phosphorus and low oxidation state phosphorus compounds, and thereafter to a metal salt or complex thereof, is employed to provide a coating on the substrate, for use in the production of electrostatic and magnostatic shielded wires and antistatic textiles. Additional improvements in the coating of filaments are provided for by subjection of the substrate to a solution of elemental phosphorus, molten elemental phosphorus, and thereafter to the metal salt or complex thereof, and also by employing a second metal salt bath.

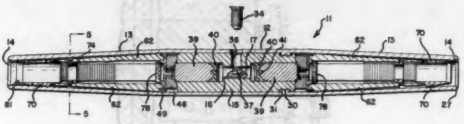
3,681,512

ELECTRICAL CONNECTOR

Walter Myers Werner, Downingtown; William Joseph Vockroth, Harrisburg, and Kenneth Scott Hays, West Exton, all of Pa., assignors to AMP Inc., Harrisburg, Pa.

Continuation of Ser. No. 18,152, March 10, 1970, abandoned. This application May 6, 1971, Ser. No. 141,033
Int. Cl. H02g 15/08
U.S. Cl. 174—84 R **20 Claims**

This invention relates to a connector device for splicing or providing terminal anchoring means for large diameter electrical cables such as power transmission cables. The novel connector includes a shell which is tapered either on each end or on one end. Within the shell, a firing chamber is provided having either one or two pistons or projectiles driven outwardly towards the tapered end. These pistons are centrally and axially located in reference to the firing chamber and drive piston or ram plates thereby transmitting power to individually acting jaw means which upon firing an explosive charge securely engage the cable inserted from one or both ends of the opening. Various means by which the spacing and the prevention of a "-



bird cage" forming during the actual explosive, splicing operation takes place have also been disclosed. Additionally, the connector herein contains means for securing a steel core in an aluminum steel reinforced cable commonly employed in the utilities industry. The present device affords a convenient and practical means for splicing cables in remote locations without the necessity of providing elaborate hydraulically operated equipment previously employed in crimping large diameter cables.

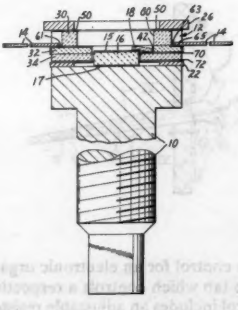
A connector wherein only one end is swaged is used for dead-ending the power cables.

3,681,513

HERMETIC POWER PACKAGE

Billy M. Hargis, Cleveland, Tenn., assignor to American Lava Corporation, Chattanooga, Tenn.

Filed Jan. 26, 1971, Ser. No. 109,888
Int. Cl. H01l 1/12, 1/14
U.S. Cl. 174—52 S **4 Claims**

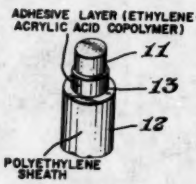


Hermetic power packages are devices in which power-consuming chip devices or integrated circuits which generate considerable amounts of heat can be mounted and which provide thermally integral heat sinks.

3,681,514
ELECTRICAL CABLE
Lee A. Rhoades, and Manley T. Mallard, both of Culpeper, Va., assignors to The Rochester Corporation, Culpeper, Va.
Division of Ser. No. 822,334, Jan. 21, 1969, Pat. No. 3,560,631, which is a division of Ser. No. 621,337, March 7, 1967, Pat. No. 3,482,034. This application March 30, 1970, Ser. No. 29,312
Int. Cl. H01b 7/18
U.S. Cl. 174—108 4 Claims

A wire rope contains one or more electrically conductive wires running along within a core strand, the conductive wires being surrounded by insulation which is in turn covered by a helically wound closely spaced crush-resistant armor wire.

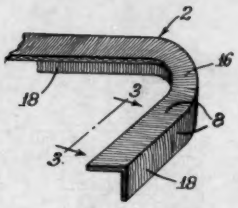
3,681,515
ELECTRIC CABLES AND LIKE CONDUCTORS
Raymond C. Mildner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 587,367, Sept. 30, 1966, which is a continuation-in-part of Ser. No. 509,814, Nov. 26, 1965, abandoned, which is a continuation-in-part of Ser. No. 325,701, Nov. 22, 1963, abandoned. This application April 29, 1971, Ser. No. 138,650
Int. Cl. H01b 7/18
U.S. Cl. 174—107 25 Claims



A metal element and a plastic element in a cable are securely bonded together by means of an adhesive thermoplastic polymer comprising a copolymer of ethylene and an ethylenically unsaturated carboxylic acid such as acrylic acid. The metal element can be in the form of a tape or metal strip of aluminum having one or both sides coated with or laminated to the adhesive thermoplastic polymer. The tape including the coated or laminated adhesive thermoplastic polymer is disposed within a cable at the desired location such that the adhesive thermoplastic polymer forms a strong bond with an adjacent element in the cable.

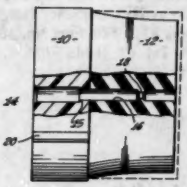
3,681,516
CONFORMABLE INSULATION
Frank W. Heinrichs, Jr., McMurray; Alex F. Polasky, Canonsburg; Charles C. Honey, and Lawrence R. Toothman, both of Pittsburgh, all of Pa., assignors to McGraw-Edison Company, Elgin, Ill.
Filed March 12, 1969, Ser. No. 806,517
Int. Cl. H01f 27/36
U.S. Cl. 174—138 E 6 Claims

This disclosure relates to a unitary insulating member comprised of a plurality of strips of creped kraft paper intermittently fastened together by a thermosettable resin adhesive and compressed to a density higher than that of any single



creped strip. The bonded unitary member has a high dielectric strength and a large degree of the resilient and conformable properties of its constituent crepe paper strips.

3,681,517
INSULATORS FOR MULTIPLE-CONDUCTOR CONNECTORS
John E. Meyn, Anaheim, Calif., assignor to Microdot Inc., Los Angeles, Calif.
Division of Ser. No. 541,162, April 8, 1966, Pat. No. 3,525,786. This application Dec. 22, 1969, Ser. No. 886,965
Int. Cl. B32b 3/10; C09j 3/14; H01b 17/32
U.S. Cl. 174—138 R 11 Claims

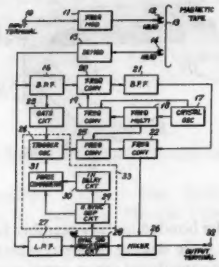


The product is a multiple-bore rigid insulator of thermosetting material with a multiple-bore elastomeric grommet united therewith. The rigid insulator is placed in a mold with multiple core pins extending from the multiple bores thereof through a mold cavity. The face of the rigid insulator is coated with uncured thermosetting adhesive and then, with the mold heated, uncured elastomeric material is extruded under heat and pressure into the mold cavity to form the grommet around the core pins and to bond the resultant grommet to the face of the insulator. When the product is ejected from the mold and from the core pins, the grommet assumes a desirable tapered configuration.

3,681,518
COLOR VIDEO SIGNAL CORRECTION SYSTEM
Tsuneyoshi Hidaka, Tokyo; Akiyoshi Morita, Yokohama-City; Yoshihiko Honjo, Yokohama-City, and Takashi Nishimura, Yokohama-City, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama-City, Kanagawa-ken, Japan
Filed May 8, 1970, Ser. No. 35,813
Claims priority, application Japan, May 10, 1969, 44/36022; May 10, 1969, 44/36021
Int. Cl. H04n 5/76
U.S. Cl. 178—5.2 R 7 Claims

A color video signal correction system for a video tape recorder removes stably differential frequency changes and differential phase shifts. The system comprises a trigger oscillator which oscillates in phase with a burst signal taken out of the chrominance signal. A phase comparator circuit means compares a phase of a horizontal synchronizing signal separated from a luminance signal, by a horizontal synchroniz-

ing separation circuit means, with a phase of a horizontal synchronizing signal delayed in one horizontal line scanning time from the separated horizontal synchronizing signal. The trigger oscillator is controlled by an output of the phase comparator.



3,681,519

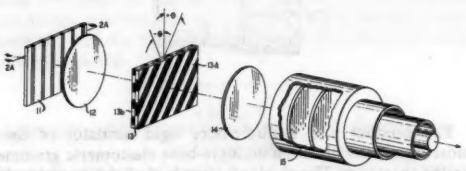
SINGLE-TUBE COLOR CAMERAS WITH OPTICAL SPATIAL FREQUENCY FILTERS

Arthur Bertel Larsen; Thomas Patrick Sosnowski, both of Colts Neck, and Richard Lee Townsend, Jr., Berkeley Heights, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 21, 1970, Ser. No. 100,163

Int. Cl. H04n 9/06

U.S. Cl. 178—5.4 ST **5 Claims**



In a Kell-type single-tube color camera system, an optical spatial frequency filter in the form of an asymmetrical rectangular wave phase-only diffraction grating is disposed between the object scene and the striped color filters. The optical filter is designed to provide an optical transfer function that has a region of high attenuation which extends from the lower limit of the carrier frequency passband, produced by the modulation of the imaged input scene by the striped color filters, to at least the upper limit of said passband.

3,681,520

SYSTEM FOR IMPROVING THE SHARPNESS IN A COLOR TELEVISION PICTURE

Hans-Dieter Schneider, Gross-Gerau, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

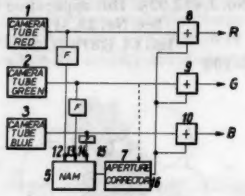
Filed April 15, 1971, Ser. No. 134,272

Claims priority, application Germany, April 16, 1970, P 20 18 149.1

Int. Cl. H04n 9/04

U.S. Cl. 178—5.4 R **7 Claims**

Either the red, green, or blue color signals or the red and blue color signal and a luminance signal are applied to the input of non-additive mixing means at whose output appears the color signal having the largest amplitude. The so-selected color signal serves as an input to aperture correction means. The aperture correction signal formed in response to the color signal of largest amplitude is added to all three color signals when the red, green, and blue signals are furnished, and to the luminance signal alone when the red, blue, and luminance signals are furnished.



3,681,521

COLOR TELEVISION CAMERA WITH DICHROIC MIRRORS

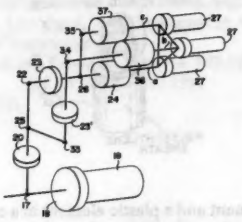
Yoshikazu Doi; Toshiro Kishikawa, both of Ohmiya-shi, and Hiroshi Nomura, Tokyo, all of Japan, assignors to Fuji Shashin Kabushiki Kaisha, Ohmiya-shi, Saitama-ken and Nippon Television Hosomo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1969, Ser. No. 792,264

Claims priority, application Japan, Jan. 30, 1968, 43/5609

Int. Cl. H04n 9/08

U.S. Cl. 178—5.4 E **3 Claims**

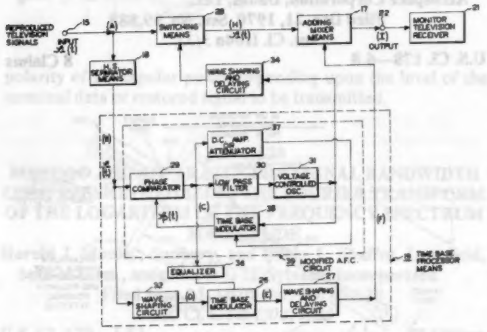


A color television camera having a photographic lens, dichroic mirror means for separating a light passing through said photographic lens into a plurality of chromatic rays and image pickup tubes for receiving said respective chromatic rays, said color television camera comprising means for deflecting in one plane a main light path which is not reflected by said dechroic mirror means and relay lens means having at least part thereof arranged adjacent said deflecting means, said dichroic mirror means inclusing at least two dichroic mirrors each arranged forwardly and rearwardly of said deflecting means and said relay lens means, one of said dichroic mirrors being positioned so as to lead one of said chromatic rays along a side light path parallel to said main light path and outside a plane in which said main light path lies, another one of said dichroic mirrors being positioned so as to lead another one of said chromatic rays along a side light path parallel to said main light path and lying in said plane, and the image-forming surfaces of said image pickup tubes being located substantially in the same plane.

3,681,522
SYSTEM FOR MINIMIZING FLUCTUATIONS OF TELEVISION SIGNAL

Kenzo Tanabe, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed June 5, 1970, Ser. No. 43,716
Claims priority, application Japan, June 10, 1969, 44/45905; June 10, 1969, 44/45906; Aug. 19, 1969, 44/66717
Int. Cl. H04n *5/08, 5/78*
U.S. Cl. 178—6.6 TC **5 Claims**



An arrangement for minimizing the picture quality reducing fluctuations in television signals reproduced from a video tape recorder and supplied to a television receiver.

Television signals reproduced from the video tape recorder are applied to signal switching means and signal separator means, respectively.

The signal switching means remove only horizontal synchronizing pulses from the reproduced television signals and result in modified picture signals. The signal separator means take out horizontal synchronizing pulses selectively, which are applied to a time base processor means in which the timing of the horizontal synchronizing pulses is modulated so as to compensate for the phase shift caused by the automatic frequency control circuit in a monitor television receiver.

The modified picture signals and processed horizontal synchronizing pulses are added together by mixer means, and then are supplied to a monitor television receiver.

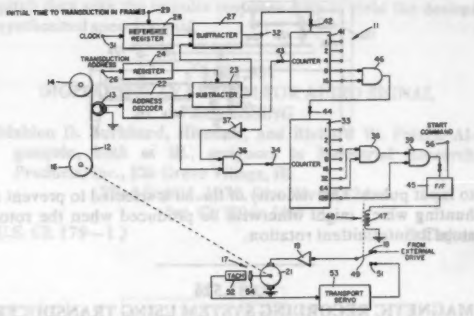
As a result, the picture quality reducing fluctuations of the reproduced television signals are minimized.

3,681,523
TRANSPORT CONTROLLER

George B. Sidline, Belmont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Aug. 13, 1970, Ser. No. 63,478
Int. Cl. G11b *27/32;* **G06f** *7/48*
U.S. Cl. 178—6.6 A **8 Claims**

The actual length a magnetic tape must be transported to position a particular storage address at a certain point is compared to a reference indicative of tape length decreasing at a known rate. Enabling and disabling signals are provided in response to the comparison; the enabling signal being provided when the actual and reference lengths are the same and the disabling signals when they are different. Two counters are coupled to receive the enabling and disabling signals and are associated with each other to provide an output signal when the actual tape length and reference tape length are equal for

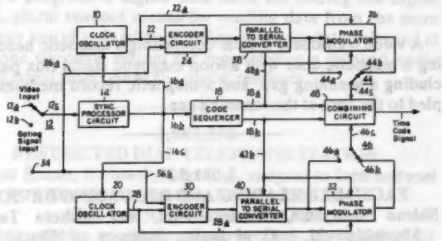


a predetermined interval and inhibit the provision of the output signal when they are not equal for the predetermined interval.

3,681,524
MULTIPLE FREQUENCY TIME CODE GENERATOR AND READER

William C. Nicholls, Yorktown Heights, N.Y., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed June 16, 1970, Ser. No. 46,754
Int. Cl. G11b *5/06, 27/14;* **H04n** *5/78*
U.S. Cl. 178—6.6 A **15 Claims**



As described herein, a multiple frequency time code generator generates sequentially at least two series of time code signals for separately identifying the television information signals with which both series of time code signals are associated. The time code signals have different frequencies and are adapted to be recorded on a separate track of a video tape recorder and reproduced therefrom at tape speeds ranging from 1.5 inches per second (ips) to 450 ips. A reader separates the reproduced time code signals into different output channels.

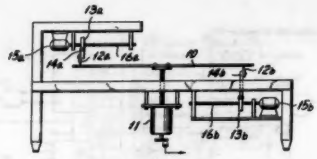
3,681,525
DIGITAL ROTATION MOTOR

Yoshiyo Wada; Hisao Kinjo; Seiichi Takashima, and Fumio Akuwa, all of Kanagawa-ken, Japan, assignors to Victor Company of Japan, Ltd., Kanagawa-ku, Yokohama-City, Kanagawa-ken, Japan

Filed Feb. 17, 1971, Ser. No. 116,119
Claims priority, application Japan, Feb. 20, 1970, 45/14214; Feb. 20, 1970, 45/14215
Int. Cl. H04n *5/76*
U.S. Cl. 178—6.6 DD **5 Claims**

A digital rotation or stepping motor contains oil of suitable

viscosity which fills the space between a rotor and a stator. The motor is digitally and intermittently stepped in response



to input pulses. The viscosity of the oil is selected to prevent a hunting which might otherwise be produced when the rotor stops its intermittent rotation.

3,681,526

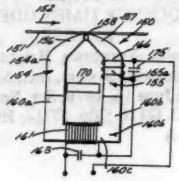
MAGNETIC RECORDING SYSTEM USING TRANSDUCER WITH FLUX PATH

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Feb. 11, 1964, Ser. No. 344,075

Int. Cl. G11b *5/20, 5/28;* H04n *5/78*

U.S. Cl. 178—6.6 A **9 Claims**



A video transducer system comprising a magnetic head having a magnetic core with a loop magnetic signal flux path including a scanning gap, and a magnetic record medium coupled to the core at the scanning gap.

3,681,527

FACSIMILE READING AND RECORDING DEVICE

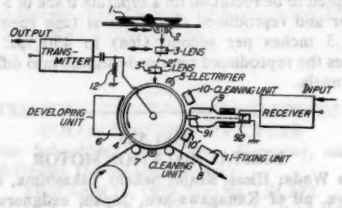
Shizuo Nishiyama, Kamakura-shi, and Makoto Tanaka, Musashino-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed March 10, 1969, Ser. No. 805,726

Claims priority, application Japan, March 15, 1968, 43/16481

Int. Cl. H04n *1/04, 1/30;* G03g *15/00*

U.S. Cl. 178—6.6 A **7 Claims**



A compact and low-cost facsimile reading and recording device comprising an electrically photosensitive surface, an electronic transfer system associated with said photosensitive surface and an electronic scanning head such as a pin tube disposed closely adjacent to said photosensitive surface, wherein reproduction of an image from a received facsimile signal is performed by forming an electrostatic latent image on the photosensitive surface by means of the pin tube and then transferring said latent image on to a recording medium, and readout of a picture or document is performed first by producing an electrostatic image of said picture or document on said photosensitive surface by means of an optical or mechanical scanning system and then modulating the current of the pin tube according to the electricity stored in said electrostatic image.

3,681,528

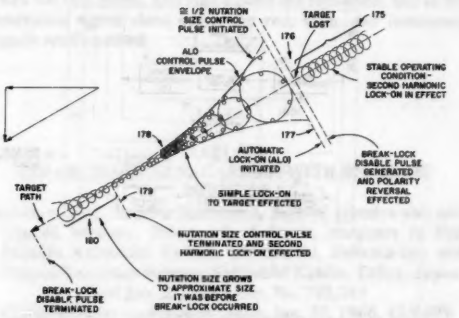
HARMONIC INFORMATION DETECTION TECHNIQUE

Charles R. Henderson, Arlington, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed Dec. 21, 1970, Ser. No. 99,888

Int. Cl. H04n *3/32*

U.S. Cl. 178—6.8 **8 Claims**


SE 1/2 NUTATION SIZE CONTROL PULSE INITIATED
TARGET LOST
175
176
ALO CONTROL PULSE ENVELOPE
STABLE OPERATING CONDITION—SECOND HARMONIC LOCK-ON IN EFFECT
178
177
AUTOMATIC LOCK-ON (ALO) INITIATED
BREAK-LOCK DISABLE PULSE GENERATED AND POLARITY REVERSAL EFFECTED
TARGET PATH
179
SIMPLE LOCK-ON TO TARGET EFFECTED
180
NUTATION SIZE CONTROL PULSE TERMINATED AND SECOND HARMONIC LOCK-ON EFFECTED
NUTATION SIZE GROWS TO APPROXIMATE SIZE IT WAS BEFORE BREAK-LOCK OCCURRED
BREAK-LOCK DISABLE PULSE TERMINATED

An optical tracking system wherein a first control means tends to lock a nutation electron beam upon and within the image of a target which has been projected upon a screen and constitutes a dark body upon a light background. A second control means functions to expand the nutating scanning pattern of the electron beam until it cuts across the light background in at least two different places to generate a signal whose frequency is equal to the second harmonic of the nutating scanning pattern. Said second control means maintains the amplitude of this second harmonic within certain limits to thereby insure that the scanning pattern always remains approximately the same size as the target.

Other logic means are provided to cause the nutating scanning pattern to find and lock-on upon the target should the target suddenly reflect the sun and become a bright object upon a dark background.

3,681,529

COMMUNICATIONS APPARATUS FOR TRANSMITTING AND RECEIVING SYNCHRONOUS AND ASYNCHRONOUS DATA

Stuart B. Cooper, Framingham, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

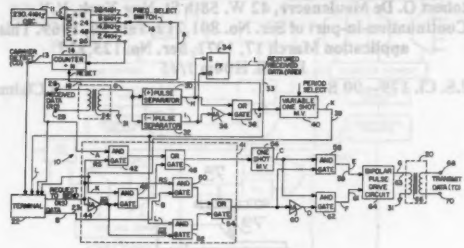
Filed Nov. 19, 1970, Ser. No. 90,976

Int. Cl. H04l *25/52*

U.S. Cl. 178—70 R **14 Claims**

Bipolar pulses received over a communications line are restored to a bilevel signal condition. A sync signal is also developed from the received bipolar pulses. Local terminal means are provided to transmit data having a bilevel characteristic, when enabled by a request to send signal. Transmit mode selection means are utilized to pass either the terminal data or restored signal and either the sync signal or a locally generated clock signal, depending on the state of the request to send signal. Sampling means responsive to the clock or sync

signal develops a timing pulse at which time bipolar pulses for transmission over communications lines are generated, the



polarity of the bipolar pulses depending upon the level of the terminal data or restored signal to be transmitted.

3,681,530

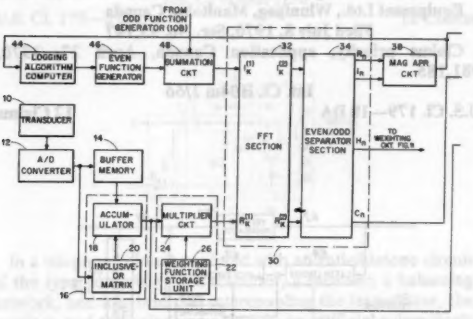
METHOD AND APPARATUS FOR SIGNAL BANDWIDTH COMPRESSION UTILIZING THE FOURIER TRANSFORM OF THE LOGARITHM OF THE FREQUENCY SPECTRUM MAGNITUDE

Harold J. Manley, Sudbury, and Harry L. Shaffer, Lynnfield, both of Mass., assignors to GTE Sylvania Incorporated

Filed June 15, 1970, Ser. No. 46,128

Int. Cl. G10l *1/02, 1/08*

U.S. Cl. 179—1 SA **37 Claims**



A bandwidth compression system such as a digital vocoder including an analysis section employs a transducer to convert an input speech wave into an electrical signal which is then digitized by an analog to digital converter. The digitized signal is directed through a spectrum device where the magnitudes of the frequency spectrum of the input speech wave are obtained. These magnitudes are then directed to a logging circuit to obtain the logarithm of the frequency spectrum magnitudes of the input speech signal. The logged magnitudes of the frequency spectrum are then directed to a computer where the discrete Fourier transform of the logged spectrum magnitudes are obtained to form the Fourier transform of the logarithm of the frequency spectrum magnitude (FTLSM) of the input speech signal. An encoding unit selects and encodes certain ones of the FTLSM coefficients for transmission to a remote terminal for analysis. The encoded signals include pitch data and vocal tract impulse data, both of which are derived from the FTLSM signals.

The analysis section of a vocoder terminal employs a decoding device which decodes the received data and separates it into pitch data and vocal tract impulse data. Connected to the decoding device is a computing device for computing the logarithm of the spectrum envelope of the vocal tract impulse response function using the discrete Fourier transform. The logged spectrum is directed through a delogging device to a fast Fourier transform (FET) computer where the Fourier sine transform of the received spectrum signals (the impulse response) are obtained. A convolution unit then convolves the pitch data with the impulse response data to yield the desired synthesized speech signal.

3,681,531

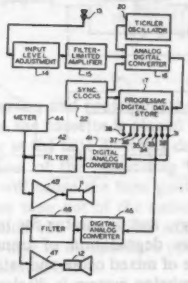
DIGITAL DELAY SYSTEM FOR AUDIO SIGNAL PROCESSING

Mahlon D. Burkhard, Hinsdale, and Richard W. Peters, Algonquin, both of Ill., assignors to Industrial Research Products, Inc., Elk Grove Village, Ill.

Filed Sept. 4, 1970, Ser. No. 69,524

Int. Cl. H04r *3/00*

U.S. Cl. 179—1 J **9 Claims**



A plural sound delay system for use in sound reinforcement in auditoria and in other applications, comprising a digital encoding system for converting an analog audio signal to digital form, a progressive digital data store for storing the digital signal, plural readout means for reading data from the store after any one of a plurality of different storage intervals, and at least one decoding system for regenerating a delayed audio analog signal from one of the digital readouts.

3,681,532

RESTRICTED DIAL TELEPHONE STATION

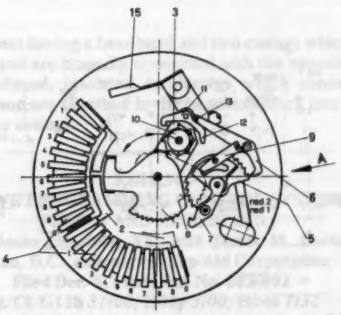
Gunther Simon, Weissach, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 9, 1970, Ser. No. 1,708

Claims priority, application Germany, Jan. 5, 1969, P 19 01 692.3

Int. Cl. H04m *17/02*

U.S. Cl. 179—6.3 R **4 Claims**

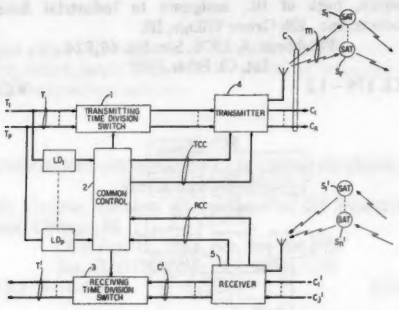


Equipment is provided for blocking certain coin box and other dial telephones with respect to certain call numbers and certain types of traffic. Mechanical means are employed to interrupt selected calls, permitting the dial to be operated but not initiating a connection to the central switching office.

3,681,533
SWITCHING STRATEGY FOR MIXED DELAY TRANSMISSION CHANNELS

Norwood G. Long, New Shrewsbury, and Carl J. May, Jr., Holmdel, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed July 24, 1969, Ser. No. 844,379
Int. Cl. H04j 5/00
U.S. Cl. 179—15 AS 8 Claims

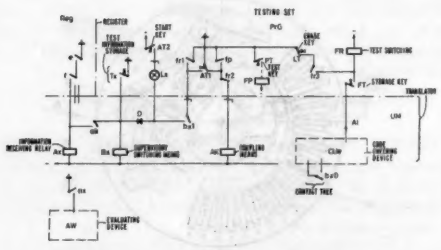


A switching strategy, and apparatus for implementing the strategy, that reduces degradation of transmission quality resulting from the use of mixed cable and satellite channels in a time divided transmission system is disclosed. The type of channel preferred by a trunk requiring a connection is determined on the basis of the types of channels the trunk was assigned locally and remotely at the time of its last connection and the type of channel in the majority at the time of the determination.

3,681,534
CIRCUIT ARRANGEMENT FOR SUPERVISING THE INPUT INFORMATION OF A TRANSLATOR IN TELECOMMUNICATION SYSTEMS AND PARTICULARLY TELEPHONE SYSTEMS

Theodor Burian, Ditzingen, and Bernhard Krause, Ludwigsburg-Eglosheim, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed March 10, 1970, Ser. No. 18,055
Claims priority, application Germany, March 13, 1969, P 19 12 625.1
Int. Cl. H04q 3/47
U.S. Cl. 179—18 ET 8 Claims

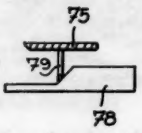


A translator in a telecommunication system is equipped with input checking means. A supervisory switching means used to check the input to the translator employs a connection to a testing set and in case of trouble, stores any faulty code signals.

3,681,535
SETTABLE AUTOMATIC CALL REPERTORY DEVICE WITH CONTROL OF DIAL, PUSHBUTTONS AND DATA MEMORIES

Robert O. De Meulenaere, 42 W. 58th St, New York, N.Y.

Continuation-in-part of Ser. No. 801,212, Feb. 20, 1969. This application March 17, 1971, Ser. No. 125,227
Int. Cl. H04m 1/45
U.S. Cl. 179—90 B 8 Claims

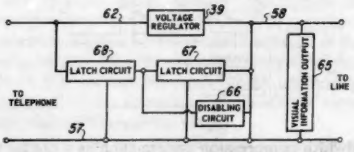


This invention relates to automatic call repertory device which utilizes a settable disc memory to store the telephone numbers. The repertory device is arranged to operate either with a dial pulse transmitting mechanism or with an electronic key pulse transmitting means.

3,681,536
ELECTRONIC TELEPHONE CALL RESTRICTING DEVICE

Arthur H. Pask; Robert E. Sparrow, both of Winnipeg, Manitoba, and Roger J. Boulanger, St. Boniface, Manitoba, all of Canada, assignors to International Electric Research & Equipment Ltd., Winnipeg, Manitoba, Canada

Filed July 8, 1970, Ser. No. 53,147
Claims priority, application Canada, April 27, 1970, 081,185
Int. Cl. H04m 1/66
U.S. Cl. 179—18 DA 12 Claims



This invention relates to an electronic telephone call restricting device adapted to be installed in a telephone line to prevent the use of a telephone for making unauthorized calls. The present invention comprises electronic means adapted to disable the telephone circuit when the first digit dialled is a designated digit. The present invention may be used with an ordinary dialling system or with a touch tone dialling system.

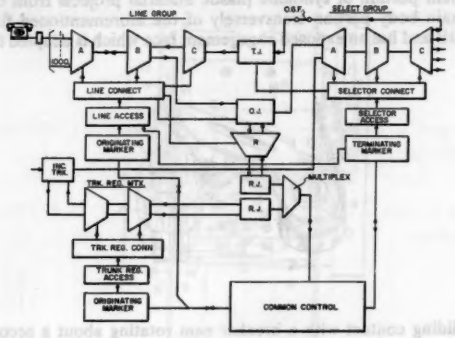
3,681,537
MARKER FOR COMMUNICATION SWITCHING SYSTEM

John W. Eddy, Villa Park; Harold G. Fitch, Clarendon Hills; Wing F. Mui, Chicago, and Angelo M. Valente, Brookfield, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed April 1, 1971, Ser. No. 130,418
Int. Cl. H04q 3/42
U.S. Cl. 179—18 GE 7 Claims

The disclosure relates to a switching network and marker used in a communication switching system. The network comprises a plurality of coordinate matrices with reed relay cross-

point switching devices. The marker is of a wired logic solid state type utilizing reed relays for connecting it to the



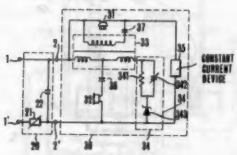
matrices. The same terminating marker is used for controlling both the line and selector matrices in completing a call.

3,681,538

TELEPHONE CIRCUITS UTILIZING NON-LINEAR ELEMENTS

Ryoichi Matsuda; Isao Kawashima, and Masaaki Terai, all of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Feb. 4, 1971, Ser. No. 112,664
Claims priority, application Japan, Feb. 7, 1970, 45/10508
Int. Cl. H04m *1/58*
U.S. Cl. 179—81 A **12 Claims**



In a telephone circuit equipted with an anti-sidetone circuit of the type comprising a transmitter, a receiver, a balancing network, and a hybrid coil intercoupling the transmitter, the receiver, and the balancing network, an artificial subscriber's line including a non-linear resistance element which varies its resistance in accordance with the voltage across the telephone lines is connected between the telephone lines and the telephone circuit, a non-linear capacitance element which varies its capacitance in accordance with the D.C. voltage across the telephone lines is included in a balanced circuit network, and a constant direct current device is connected in series with the transmitter.

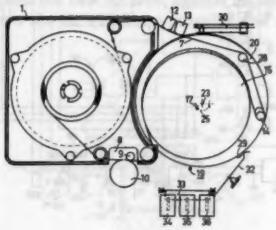
3,681,539

TAPE DIVERTING DEVICE IN A TAPE RECORDER APPARATUS WITH DRUM SHIFT DURING TAPE ENGAGEMENT

Walter Eibensteiner, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 20, 1970, Ser. No. 56,490
Claims priority, application Austria, Aug. 4, 1969, A 7474/69
Int. Cl. G11b *15/66, 23/04*
U.S. Cl. 179—100.2 Z **17 Claims**

An apparatus for recording and/or playback of signals having a wide frequency spectrum carried on a tape carrier accommodated on a cassette. The cassette is provided with an opening across which the tape extends when not being played or not in an operative condition. The tape cassette is placed on the apparatus in a playback position on a supporting base. The apparatus has a cylindrically shaped drum mounted adjacent the cassette having its longitudinal axis at an angle to the axis normal to the principal plane of the cassette. A tape diverting device having a support member mounted for rotational movement about said drum and having at least one tape guide



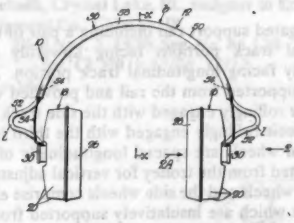
stud mounted thereon and projecting through the opening in the cassette when the cassette is placed on the apparatus for engaging the tape as the tape diverting device is rotated about the drum. Rotation of the supporting member of the tape diverting device will cause the tape guide stud to engage the tape and draw the tape out of the cassette and wind it, in a helical path, around the cylindrical surface of the drum to thereby place the tape in an operative position for playback in contact with transducer heads.

3,681,540

HEADSET WITH SHEATHED INSULATED-CONDUCTORS FOR CONNECTION OF EARPHONES

Ernest F. Thomson, Fairfield, Conn., assignor to KMS Industries, Inc., North Haven, Conn.

Filed Nov. 16, 1970, Ser. No. 89,714
Int. Cl. H04m *1/05*
U.S. Cl. 179—156 **8 Claims**



In a headset having a headband and two casings which carry earphones and are hingedly connected with the opposite ends of the headband, insulated conductors which connect the earphones and are sheathed in the headband even into the interiors of the casings.

3,681,541

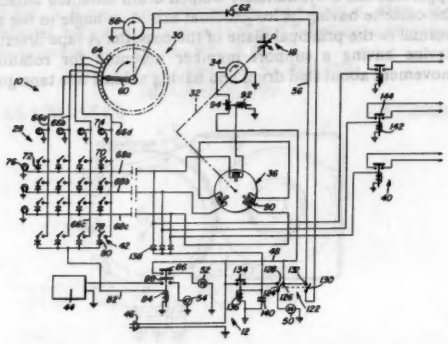
SELECTIVE PROGRAMMING CONTROL SYSTEM FOR TUNING AND RECORDING

Willie L. Dozier, Norfolk, Va., and James M. Carter, Jr., Washington, D.C., assignors to Top Aid Corporation

Filed Dec. 4, 1969, Ser. No. 882,192
Int. Cl. G11b *31/00;* H02p *3/00;* H04b *1/32*
U.S. Cl. 179—100.11 **2 Claims**

A TV receiver is automatically tuned to a receiving channel during an interval of time, the channel and time interval being preselected through the keyboard of a programmer. During the preselected interval of time and for a short duration

thereafter, operating voltage is supplied by the programmer to the receiver. Channel selection is achieved by motor advancement of a tuner control during the selected interval, the motor being deenergized when the tuner control reaches the preselected channel position.



3,681,542

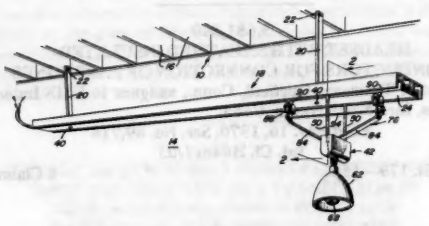
TROLLEY MOUNTED ELECTRICAL OUTLET

Ernest E. Johnson, 25 Rose St., Brookville, Pa.

Filed Aug. 7, 1970, Ser. No. 62,031

Int. Cl. B60m *1/34*; B60l *5/00*

U.S. Cl. 191—50 **5 Claims**



An elongated support rail including a pair of opposite side longitudinal track portions facing upwardly and a third downwardly facing longitudinal track portion. A suspended trolley is supported from the rail and provided with opposite side wheels rollingly engaged with the side track portions and central wheels rollingly engaged with the third track portion. The central wheels are spaced longitudinally of the rail and are supported from the trolley for vertical adjustment relative to the side wheels and the side wheels comprise electrical contact rollers which are insulatively supported from the trolley and are operative to conduct electrical current from the opposite side track portions, the latter being constructed of conductive material and insulatively supported relative to each other for connection with a suitable source of electrical potential.

3,681,543

IGNITION DISTRIBUTOR WITH CAM AND CAM FOLLOWER LUBRICATION MEANS

Hubert Schratz, Hinterstein, and Karl-Heinz Schneider, Sonthofen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

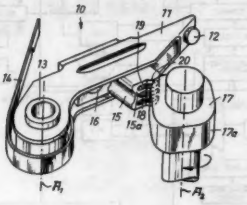
Filed April 27, 1970, Ser. No. 32,211

Claims priority, application Germany, May 6, 1969, P 19 22 923.3

Int. Cl. H01h *19/62*; F16h *53/06*

U.S. Cl. 200—19 R **12 Claims**

A breaker lever for use in ignition systems of combustion engines has a main portion mountable at one end for pivotal movement about a predetermined first axis and provided at its opposite end with an electrical contact adapted to cooperate with an adjacent contact of the ignition system. An engagement portion of synthetic plastic material projects from the main body portion transversely of the aforementioned first axis and has an exposed engagement face which is adapted for



sliding contact with a breaker cam rotating about a second axis. The engagement portion is formed with one or preferably several pockets which extend inwardly from the exposed face and which accommodate a viscous lubricant for transfer to and lubrication of the breaker cam in automatic response to sliding contact of the engagement face with the same.

3,681,544

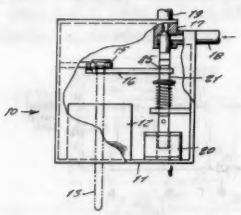
ANTI-THEFT AUTO SWITCH

J. Ray Etheridge, Rt. 3, Box 235, Wilson, N.C.

Filed April 13, 1971, Ser. No. 133,500

Int. Cl. H01h *27/00*

U.S. Cl. 200—44 **1 Claim**



A switch for installation in an automotive vehicle, the switch preventing theft of the automobile by not allowing the engine to be started unless an exact key is used to trip a latch that holds the fuel valve in an open position, the switch including means to receive either a long key for normal use by a motorist, or a short key that can be surrendered to a parking attendant, the short key allowing the engine to be started so the vehicle can travel on what little fuel is in the carburator but which does not open the fuel valve for a continuous engine operation.

3,681,545

DRAWOUT SWITCHGEAR

Albert R. Cellerini, Beaver; John Majcher, and Charles R. Paton, both of New Brighton, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

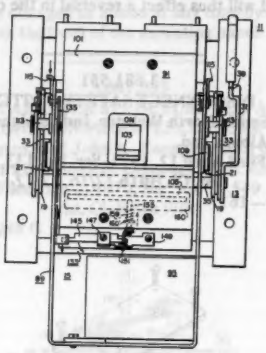
Filed Sept. 24, 1970, Ser. No. 75,182

Int. Cl. H01h *9/20*

U.S. Cl. 200—50 AA **10 Claims**

Improved drawout switchgear comprises interlocking means automatically operable to lock the movable assembly in the connected position with interlock defeating means operable to maintain the interlock means in a defeated position while an operator operates a levering mechanism to lever the movable assembly from the connected position to a disconnected position. The interlock means is connected to maintain

the trip structure of the drawout circuit breaker in a tripped condition when the interlock means is in the defeated or non-



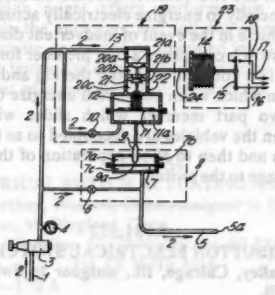
interlocking position. Improved secondary contact means is provided for connecting and disconnecting control circuits of the switchgear.

3,681,546

LEVEL DETECTOR

Rene Georges Coln, St. Pol S/Mer; Robert-Justin Croo, DunkirK, and Pierre Henri Meuret, St. Pol S/Mer, all of France, assignors to The British Petroleum Company Limited, London, England

Filed Dec. 23, 1970, Ser. No. 100,962
Claims priority, application France, Dec. 23, 1969, 6944543
Int. Cl. H01h *35/32*
U.S. Cl. 200—81 R **4 Claims**



A pneumatic level detector has a probe connected to a pneumatic amplifier, the output of which is supplied to a pneumatic relay. When a liquid reaches the level of the probe it blocks the probe and the consequential rise of pressure is amplified so that the pneumatic relay is activated. The relay may operate an electric Switch.

3,681,547

SNAP ACTION SWITCH WITH FREE-FLOATING ROLLER AND CAM SHAPED ACTUATOR

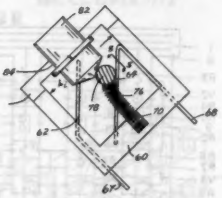
Lyndon W. Burch, 3 River St. Place, Boston, Mass., and Hadley K. Burch, South Pond, Pittsfield, Vt.

Filed Nov. 19, 1969, Ser. No. 877,959
Int. Cl. H01h *13/32*, *13/28*
U.S. Cl. 200—68 **3 Claims**

Principles of switching are disclosed which variously enable achievement of simplicity, high current for size, long life and automated production. The principles are applicable to most switching situations.

Conductor elements which are discrete, loosely confined by casing, dropped into operating position during assembly, circular, rigid, rotatable, elongated, in the form of a laterally moving rod, serving as a snap action bus, and capable of double make and break are variously shown.

Directing assemblies move the conductor elements along a first surface until a release region is reached. Resilient energy stored during that movement then propels the conductor element away from the first surface, against an opposed surface. Assemblies are shown which are movable and self adjustable



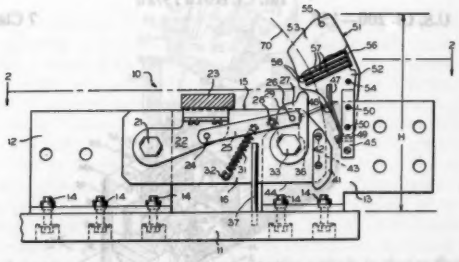
so as to constrain the conductor element against either opposed surface. Directing assemblies featured have faces that constrain the conductor, wedge it forward and, after release, divert it to the opposed surface. Projecting members that define these faces are shown as actuators movable relative toward the contact surfaces. Resilient members are shown on the opposite side of the conductor element, confined between the latter and a formation of the housing. The resilient members are arranged to propel the conductor along a path lying at an acute angle to the path the conductor element followed earlier as it approached the release region.

3,681,548

ARC CONTROL FOR LOAD-BREAK SWITCHES

John W. Erickson, Crystal Lake, Ill., assignor to Erickson Electrical Equipment Co., Chicago, Ill.

Filed Nov. 2, 1970, Ser. No. 86,130
Int. Cl. H01h *33/08*, *33/12*
U.S. Cl. 200—144 R **3 Claims**

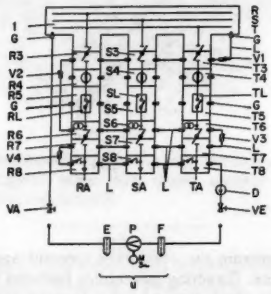


A high-current load-break switch for applications in which the switch may be opened under fault conditions, comprising a dual-blade movable contact pivoted on one fixed contact and engageable with a second fixed contact, arcing contacts asymmetrically mounted on one blade of the movable contact and on the second fixed contact, and an asymmetrical arc chute aligned with the arcing contacts.

3,681,549
MULTI-PHASE PRESSURE GAS INSULATED METAL ENCLOSED SWITCH PLANT

Wolfgang Schmitz, Birkenau, and Gerhard Korner, Schriesheim, both of Germany, assignors to Aktiengesellschaft Brown Boveri & Cie, Baden, Switzerland

Filed May 18, 1970, Ser. No. 38,229
Claims priority, application Germany, May 30, 1969, P 19 27 561.7
Int. Cl. H01h *33/57*
U.S. Cl. 200—148 E 11 Claims

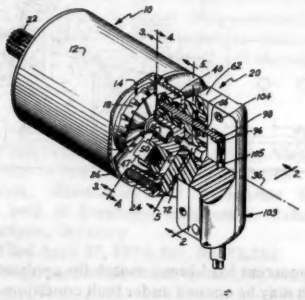


A pressurized gas insulated switchgear panel includes a pressurized gas chamber enclosing a three-phase bus bar, to which are connected single-phase outlets. Each outlet is divided in succession into a first gas-pressurized isolating switch chamber, a low-pressure chamber and a correlated high-pressure chamber for the phase circuit breaker, a gas-pressurized voltage transformer chamber, a second gas-pressurized isolating switch chamber and finally a further gas-pressurized chamber housing the ground and cable connections. A gas circulating plant including a pump has its high pressure, outlet side connected to the gas chamber enclosing the three-phase bus bar and its low pressure, inlet side connected to the outlet from the ground chambers.

3,681,550
MOTOR SWITCH ARRANGEMENT

Max W. Perry, Hastings, and Norman D. Brockelsby, Grand Island, both of Nebr., assignors to Dutton-Lainson Company

Continuation of Ser. No. 90,737, Nov. 18, 1970,. This application July 30, 1971, Ser. No. 167,864
Int. Cl. H01h *19/28*
U.S. Cl. 200—155 7 Claims

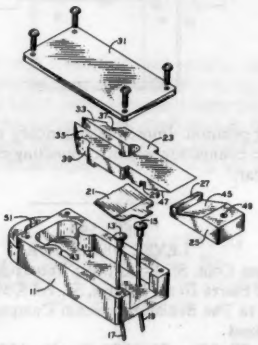


A direct current motor is provided with a switch which may be rotated in opposite directions to control the direction of operation of the motor. Power is supplied to the split ring commutator of the motor by means of spring-biased brushes passing through openings in an insulating plate positioned between the commutator and the brushes. Rotation of the brushes over the surface of the insulating plate will effect a change in the position of the brushes through the openings in the plate and will thus effect a reversal in the operation of the motor.

3,681,551
DISCONNECT SAFETY SWITCH

Gregory A. Smith, North Webster, Ind., assignor to Lyall Electric, Inc., Albion, Ind.

Filed April 12, 1971, Ser. No. 133,293
Int. Cl. H01h *17/16, 17/12*
U.S. Cl. 200—161 5 Claims

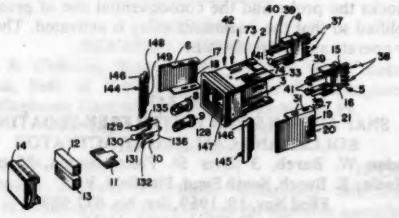


A safety switch for attachment to both a towing vehicle and a towed vehicle and operable to change its electrical state in the event that the two vehicles become mechanically decoupled and especially to energize electrically actuated brakes on the towed vehicle in the event of inadvertent disconnect is disclosed. The switch comprises a first member forming a switch shell having two contacts mounted therein and leads extending therefrom which when connected energize the brakes and a second two part member which slides within the first member when the vehicles are decoupled so as to connect the two contacts and then to allow separation of the two parts to prevent damage to the switch.

3,681,552
PUSHBUTTON ELECTRICAL SWITCH UNIT

James R. Bailey, Chicago, Ill., assignor to Switchcraft, Inc., Chicago, Ill.

Filed July 23, 1970, Ser. No. 57,687
Int. Cl. H01h *9/02*
U.S. Cl. 200—168 C 10 Claims



Push button electrical switch units adapted for use in panels are provided which have unique clamp mounting brackets permitting the switch to be mounted and removed from the front of a panel and eliminating the need for loose hardware,

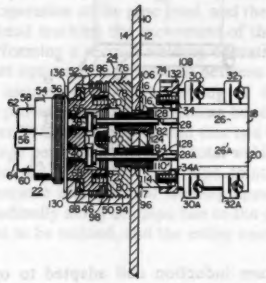
mounting sleeves and complicated assembly. The switch structure also provides for lamps to illuminate the push button and can be re-lamped from the front of the unit. Molded switch modules are simply snapped into the rear of the switch housing and can be changed or added at any time by removing the switch unit from the front of the mounting panel.

3,681,553

SWITCH ADAPTER STRUCTURE FOR A DUST-IGNITION-PROOF ENCLOSURE

Lewis M. Lehman, and John A. Koeppler, both of Milwaukee, Wis., assignors to Square D. Company, Park Ridge, Ill.

Filed Oct. 2, 1970, Ser. No. 77,549
Int. Cl. H01h *9/04*
U.S. Cl. 200—168 G **10 Claims**



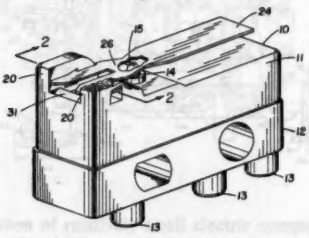
An adapter structure which will permit standard switch operators of the oil tight type to be used in dust-ignition-proof enclosures. The adapter permits the switch operator to be mounted on the outside surface of a door to actuate a switch mounted on the inside surface of the door and provides a structure which will exclude ignitable amounts of dust or amounts which might affect performances or ratings of devices within the enclosure and will not permit arcs, sparks or heat otherwise generated or liberated inside of the enclosure to cause ignition of exterior accumulations or atmospheric suspensions of a specified dust on or in the vicinity of the enclosure.

3,681,554

ELECTRICAL SWITCH ACTUATING ASSEMBLY

Ronald H. Arthur, Wolcott, Conn., assignor to Unimax Switch Corporation, Wallingford, Conn.

Filed Dec. 11, 1970, Ser. No. 97,210
Int. Cl. H01h *3/04*
U.S. Cl. 200—172 A **5 Claims**



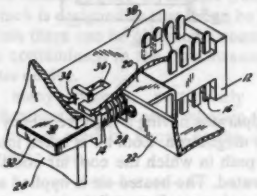
A switch actuating assembly includes a switch body, and a switch operating plunger extending through one side of the switch body. A generally cruciform shaped operating lever has cross arms pivotally mounted in apertures in ears on the cover of the switch body, the lever being positioned to cooperate with the plunger in operation of the switch. The apertures, which may be polygonal, are sufficiently large to permit assembly of the operating lever by rotation about its longitudinal axis, and the lever has a bifurcated end which can be spread to urge the pivots of the lever further into the apertures to inhibit removal.

3,681,555

PLAY-FREE KNOB FOR PUSH-BUTTON SWITCH

Masao Ohkita, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sept. 30, 1971, Ser. No. 185,150
Claims priority, application Japan, Oct. 2, 1970, 45/98078
Int. Cl. H01h *3/12*
U.S. Cl. 200—172 R **8 Claims**



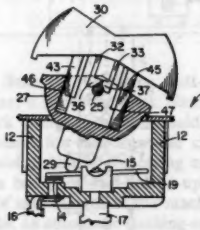
An actuating member for a switch mounted on a circuit board has a projection that moves therewith and which slidably engages the board, so that the knob is reliably guided in a defined path as it actuates the switch. Preferably, the actuating member comprises knob on which the projection is formed, and the board has a slot for receiving the projection.

3,681,556

SNAP-ON ROCKER CAP FOR ELECTRIC SWITCH

Thomas F. Osika, Gary, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.

Filed Oct. 26, 1971, Ser. No. 192,192
Int. Cl. H01h *3/04*
U.S. Cl. 200—172 A **7 Claims**

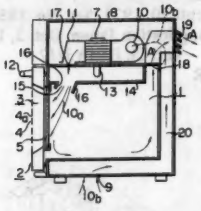


A snap-on rocker cap for an electric switch includes first and second flexible tabs which extend from the rocker each of which have foot portions extending toward and spaced adjacent to each other. The switch carrier member which operates to open and close the switch contacts is rotatably mounted to the switch housing by an axle member. The cap is mounted to the carrier member by snapping the resilient mounting tabs about the axle with first and second alignment legs on the cap fitting into corresponding slots in the carrier member for positioning the rocker cap.

3,681,557
ELECTRONIC COOKING APPARATUS

Masataka Suzuki, and Minoru Shibata, both of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1970, Ser. No. 81,403
Claims priority, application Japan, Oct. 23, 1969, 44/100839; Oct. 27, 1969, 44/101865
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 7 Claims

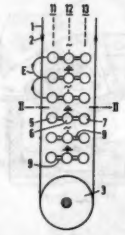


Cooking apparatus having a high frequency energy generator made as a magnetron. Cool air is taken into the apparatus along a flow path in which the cool air cools the magnetron and is thus heated. The heated air is applied as a hot air flow directly on to and generally parallel with a major inner surface of an inspection window on the apparatus. The air flow first contacts the window and then flows through and across the cooking compartment of the apparatus thus to eliminate formation of condensation on the window and splatter from reaching the window as food is cooked in the apparatus. Provision is made to eliminate leakage of high frequency energy or ratiation through the window by use of a shield that allows development of the hot air flow over the inner surface of the window.

3,681,558
CAPACITIVE HIGH-FREQUENCY HEATING APPARATUS

Hans Christian Grassman, Igelsdorf, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed June 2, 1971, Ser. No. 149,261
Claims priority, application Germany, June 5, 1970, P 20 27 674.8
Int. Cl. H05b 5/00
U.S. Cl. 219—10.61 3 Claims

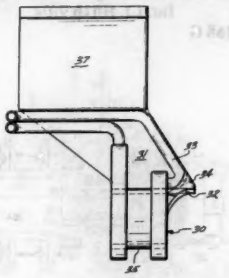


An apparatus for uniform capacitive heating of bands of dielectric material such as paper and the like has two electrode groups arranged in respective mutually parallel planes. Each of the electrode groups includes a plurality of rod-like electrodes equally spaced in a row and each of the electrodes of one of the groups lies opposite a corresponding one of the electrodes of the other group. A feed system is arranged in a third plane intermediate the two electrode groups and includes a plurality of individual rods, each of said rods being disposed between a corresponding pair of said opposite electrodes. A high-frequency supply is provided for supplying the feed systems and the rods are alternately connected with different poles of the supply. A contactor is slidably mounted between each of the rods and the corresponding pair of opposite electrodes.

3,681,559
INDUCTION COIL FOR HIGH FREQUENCY WELDING

Jack Morris, Orange, Conn., assignor to Olin Corporation

Filed March 30, 1971, Ser. No. 129,523
Int. Cl. H05b 9/02
U.S. Cl. 219—10.79 2 Claims

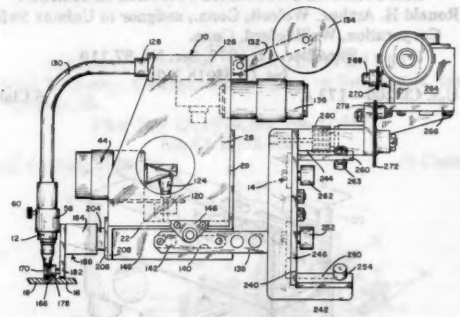


A single turn induction coil adapted to operate at high power levels, particularly for welding copper and copper base alloy strip into tubing. The coil comprises a split cylindrical member defining a longitudinally extending gap, nose portions extending out from the cylindrical member on both sides of the gap, web members conductively attached on both sides of the gap to the cylindrical member, and the nose portions, and cooling means heat conductively bonded to the cylindrical member, the nose portions and the web members.

3,681,560
METHOD AND MEANS FOR WELDING PIPE SECTIONS

Richard Carl Stanley, Tulsa, Okla., assignor to Midwestern Specialties, Ltd., Tulsa, Okla.

Filed Nov. 25, 1968, Ser. No. 778,416
Int. Cl. B23k 31/06
U.S. Cl. 219—61 11 Claims



A method and means of welding adjacent pipe sections in tandem relation at the installation site for the pipe line. An internal clamping apparatus simultaneously engages the inner periphery of adjacent pipe ends in such a manner as to apply radially outward pressure thereto for reforming the ends into substantially identical circular configurations, regardless of any existing deformation in the pipe. The two reformed pipe ends are securely retained in an abutting position by the

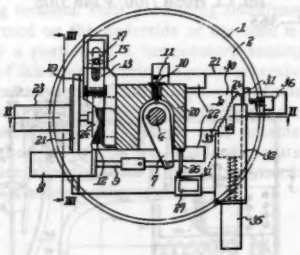
clamping means during the entire welding operation. An external welding apparatus is secured around the outer periphery of the pipe in the proximity of the abutting pipe ends for providing a circumferential weld at the pipe joint. The welding apparatus includes a pair of independently movable carriages, with each carriage being provided with a plurality of welding heads for performing simultaneous but sequential welding operations. One of the carriages moves from a position corresponding to 0° through a distance of substantially 180° around the circumference of the pipe while the other of the carriages moves around the circumference first from a position of 270° to 180° and then from 360° back to 270° whereby the welding operation is performed in a balanced manner around the entire circumference of the pipe joint. The welding heads of each carriage perform simultaneous welding operations, with the welding head performing a first welding operation at the pipe joint, and the next succeeding welding head tracking the movement of the first welding head and performing a second welding operation at substantially the exact optimum time interval between the two welding steps to assure an efficient welding of the joint. It is preferable to provide three of the welding heads on each carriage. However, it has also been found that two welding heads on each carriage perform an efficient total welding operation. Subsequent to the welding of the pipe joint, the internal clamping apparatus and external welding apparatus may be moved longitudinally along the pipe line to the position of the next pipe joint to be welded, and the entire operation may be repeated.

3,681,561

TURNTABLE TYPE WORK FEEDING METHOD OF FEEDING MULTIPLE-CONTACT ELECTRIC COMPONENTS FOR CONTACT WELDING THEREOF AND APPARATUS FOR PERFORMING SUCH METHOD

Teruo Okano, 40-28-404, 2-chome, Shimouma, Segatgaya-ku, Tokyo, Japan

Filed Aug. 11, 1971, Ser. No. 170,822
Claims priority, application Japan, Aug. 24, 1970, 45/73493
Int. Cl. B23k *11/10*
U.S. Cl. 219—80 **6 Claims**



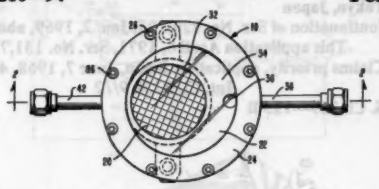
In fabrication of relatively small electric components and particularly of multiple-contact electric components having three or more electric contacts arranged in a straight line, it is now possible to perform contact welding operation efficiently by a turntable type work feeding system, in which the step of presenting a work to the contact welding unit by turntable means and the step of rectilinearly moving the work relative to the contact welding unit are repeated. The work feeding turntable structure is supported on a base plate and laterally movable by thrust means operably connected therewith.

3,681,562

FILTER DEVICE AND TRANSPARENT COVER

John P. Winzen, 2800 Neilson Way, Santa Monica, Calif.

Filed Jan. 12, 1970, Ser. No. 2,190
Int. Cl. B01d *29/00*
U.S. Cl. 210—94 **2 Claims**



The invention relates to a see-through or transparent in-line filter device which is designed so that it can be inserted into a fluid line wherein there can be obtained a constant reading of the particulate contaminant in the fluid stream which passes through the filter device.

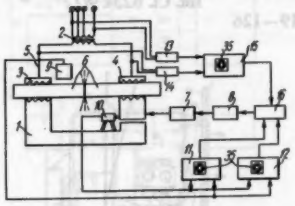
There are many systems, particularly dealing with aerospace applications and processes wherein the contamination in a fluid stream must be known to the controller on a constant or periodic basis.

3,681,563

CONTINUOUS FLASH-OFF RESISTANCE BUTT-WELDING

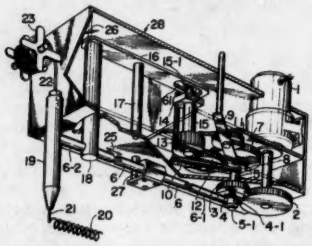
Viktor Senderovich Lifshits, Kavkazsky bulvar, 21, korpus 2, kv. 41; Vladimir Rubenovich Andrianov, Proezd Zarevy, 3, kv. 19; Nikolai Nikolaevich Rykalin, ulitsa Akademika Gubkina, 4, kv. 64; Tibor Ferentsevich Krasnev, Starokirpichny pereulok, 4, kv. 1, all of Moscow; Nikolai Vasilievich Podola, ulitsa Pushkinskaya, 8, kv. 12, and Vadim Petrovich Kirvonos, ulitsa Repina, 13, kv. 1, both of Kiev, all of U.S.S.R.

Filed Nov. 10, 1971, Ser. No. 197,204
Int. Cl. B23k *11/04*
U.S. Cl. 219—97 **2 Claims**



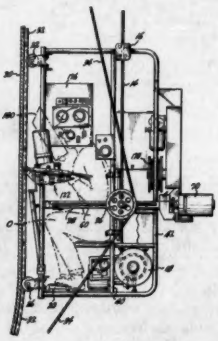
A continuous flash-off resistance butt-welding machine, comprising: a base; a movable work clamp located on said base; a fixed work clamp located on said base; a hydraulic traversing mechanism for said movable clamp; a follow-up slide to control said hydraulic traversing mechanism for said movable clamp; a barrel of said follow-up slide rigidly connected with one of said clamps of the machine; a plunger for said follow-up slide; an automatic flashing-rate control device; a device for automatic control of the initiation of the upsetting process; a device for automatic control of the amount of upset; actuators of said devices formed as a single unit rigidly connected with the other said clamp of the machine and incorporating a rod, two lengthwise motion drives for said rod, a restrictor of said rod lengthwise motion and a drive for said restrictor; one of said drives for lengthwise motion of said rod being interconnected with the outlet of said automatic flashing-rate control device; the other said drive for lengthwise motion of said rod being interconnected with the outlet of said device for automatic control of the initiation of the upsetting process; said drive for the restrictor being interconnected with the outlet of said device for automatic control of the amount of upset; said rod of the unit being connected to said plunger of the follow-up slide.

3,681,564
AUTOMATIC OSCILLATING ARC WELDING METHOD AND APPARATUS
Yoshio Hiyama, Tokyo; Haruo Fujita, Kawasaki; Eiichi Tsunetomi, Tokyo; Kan Okada, and Satoshi Kude, both of Funabashi, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Continuation of Ser. No. 829,195, Jan. 2, 1969, abandoned. This application April 6, 1971, Ser. No. 131,762
Claims priority, application Japan, June 7, 1968, 43/38689
Int. Cl. B23k 9/12
U.S. Cl. 219—125 R 6 Claims



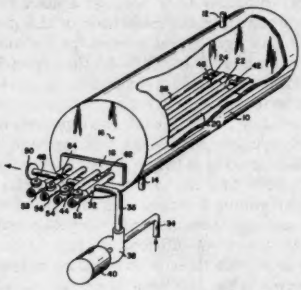
Method of operating an apparatus for automatic arc welding with the welding head oscillating to form figure eight patterns, such oscillating motion being carried out by compounding, on an oscillating motion compounding shaft, two reciprocating motions in different directions, which is converted into one original rotation, such compounding and conversion being done in one and the same apparatus.

3,681,565
SUSPENDED STAGING INCORPORATING AUTOMATIC WELDING EQUIPMENT
Sidney L. Fisher, 9203 Mount View Dr., Renton, Wash.
Filed Sept. 29, 1969, Ser. No. 861,757
Int. Cl. B23k 9/12
U.S. Cl. 219—126 10 Claims



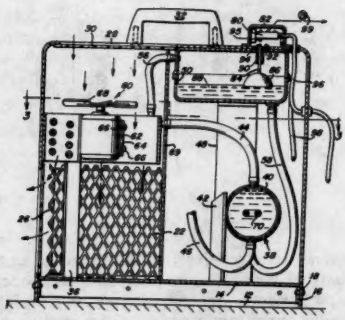
A welding torch is mounted at the upper end of a generally vertical swing arm. The lower end of such arm is pivotally connected to a lower frame portion of a single cable suspended staging. One or more tensioned hold-in lines hold the staging inwardly against the object on which welding work is being done. Each hold-in line rides on a sheave which is automatically controlled to move either towards or away from the object for the purpose of maintaining proper tension in the hold-in line. The swing arm is resiliently urged towards the object by an adjustable torsion spring mechanism. Cooling water for the welding torch is circulated through frame members of the staging, whereby such members function as both structural members and heat dissipating radiator members.

3,681,566
HEATING SYSTEM FOR ASPHALT EQUIPMENT
William W. Sellers, 396 E. Church Rd., Rosemont, Pa.
Filed Oct. 23, 1970, Ser. No. 83,819
Int. Cl. H05b 3/82; F24h 1/10
U.S. Cl. 219—326 17 Claims



A controlled heating system, in which heat-transfer oil, which is circulated through jacketed heating means installed in an asphalt tank, effects the production of a high heat input when oil is flowing, and a low heat input when oil is not flowing. "There are three electrical embodiments disclosed, one involving a plurality of electrically resistive elements all of which are connected to a source of electrical current when heat transfer fluid is flowing with at least one of the elements being disconnected when heat transfer fluid is not flowing; a second in which three electrically resistive elements are connected to a source of current in a Y-configuration when heat transfer fluid is not flowing and in a 'delta' configuration when heat transfer fluid is flowing; and a third in which three electrically resistive elements are connected in a Y-configuration, all of the elements being energized for high capacity operation while only two elements are energized to effect heating at a lower rate. A fourth embodiment involves a gas-fired heating system."

3,681,567
PORTABLE ELECTRIC SPACE HEATER
William R. Boecher, R.F.D. Box 150, Cordova, Ill.
Filed Sept. 30, 1970, Ser. No. 76,747
Int. Cl. H05b 1/00; F24h 3/06
U.S. Cl. 219—365 3 Claims



A portable enclosed space heater wherein an inside wall divides the housing into front and rear compartments. A fluid reservoir and a fluid heater are mounted in the rear compartment of the housing and are connected to each other so that the fluid in the heater may be replenished from the reservoir.

A reversible fan and a U-shaped radiator are both horizontally mounted in the front compartment of the housing. The heater is designed to conduct heated fluid to the radiator by thermosiphon action. The fan is mounted above the radiator with its motor disposed in the opening of the radiator so that it may blow heated air that is confined to the front compartment through the radiator and outward through air vents that are formed in the front compartment of the housing. The air vents are located in the front and to walls of the front compartment with the radiator disposed at the upper edge of the front wall vent. A cutoff switch mounted on the housing is actuated by a float and rod arrangement located in the reservoir to deenergize the fan and heater when the fluid in the reservoir falls below a predetermined level.

3,681,568

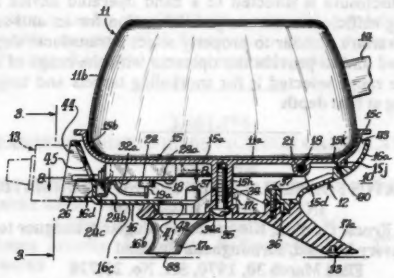
ELECTRICALLY HEATED COOKING APPLIANCE

George H. Schaefer, Wauwatosa, Wis., assignor to John Oster Manufacturing, Milwaukee, Wis.

Continuation of Ser. No. 41,239, May 28, 1970, abandoned. This application Dec. 15, 1971, Ser. No. 208,429

Int. Cl. F27d *11/02*

U.S. Cl. 219—432 11 Claims



An electrically heated cooling appliance of the type having a removable, probe-type, thermostatic temperature control device and comprising a base having an upper surface to be heated and an electric heater means on the underside of the base having terminal ends protruding therefrom. Means integrally formed on the underside of the base is provided to define only a portion of a temperature sensing zone. The remainder of this zone wherein the probe is received is defined by bracket means secured to the underside of said base which bracket means also includes means supporting a pair of terminal connectors for engagement with suitable connectors defined on the removable probe-type temperature-responsive, control device when the latter is applied by inserting the probe into the temperature sensing zone.

3,681,569

HEAT CONTROL SYSTEM

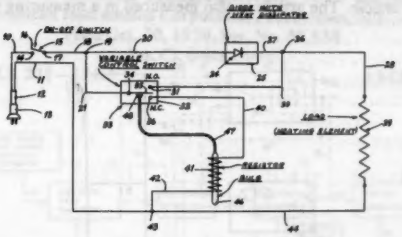
John F. Schwarz, Affton, Mo., assignor to Hercules Galion Products, Inc., Galion, Ohio

Filed Dec. 22, 1967, Ser. No. 692,769

Int. Cl. H05b *1/02*

U.S. Cl. 219—492 6 Claims

A novel method of and a novel unit for controlling the heat input and the operating temperature of an electric heating element, such as those of an electric broiler, or the like, the method including cyclically alternately supplying full current and a predetermined less amount of current to such electric heating element, the unit comprising an adjustable proportionate timer and a diode electrically connected between the electric element and a power supply to accomplish said method.



3,681,570

METHOD AND APPARATUS FOR IDENTIFYING ARTICLES

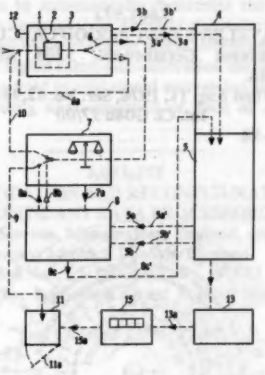
Jurg Abt, Uster, Switzerland, assignor to Zellweger Ltd., Uster, Switzerland

Filed March 27, 1970, Ser. No. 23,410

Claims priority, application Switzerland, March 26, 1969, 4553/69

Int. Cl. G06k *17/00*; G06m *1/27*; G06k *7/10*

U.S. Cl. 235—61.7 R 17 Claims



The articles are delivered onto a reader which reads a code on the article and delivers an identifying signal to the computer. The article is then weighed in a measuring unit. The computer emits a signal to the store so as to release data associated with the received signal. The released data which represents a tolerance range is emitted to a comparator which also receives a signal from the measuring unit conforming to the weight of the article. The signal is then compared with the tolerance range. If the signal is in the range, the article is dispensed for packaging; if not, the article is recycled.

3,681,571

SYSTEM FOR IDENTIFYING ARTICLES

Walter Strohschneider, Oberrieden, Switzerland, assignor to Zellweger Ltd., Uster, Switzerland

Filed April 17, 1970, Ser. No. 29,395

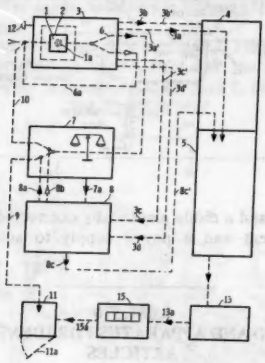
Claims priority, application Switzerland, April 21, 1969, 6030/69

Int. Cl. G06k *7/14*; H04q *3/54*; G06k *15/18*

U.S. Cl. 235—61.7 R 18 Claims

The articles are each delivered to a reader which emits one signal to an evaluation unit corresponding to the information

contained in the information carrier on the article as well as a second signal to a comparator corresponding to either a nominal value or a tolerance range of a measureable property of the article. The article is also measured in a measuring unit



which emits a third signal to the comparator corresponding to the measured property. If the measured signal agrees with the nominal value or tolerance range, the information of the first signal is released for processing; if not, the article is recycled.

3,681,572

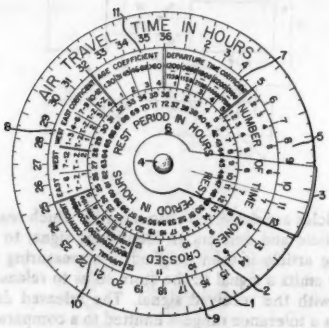
AIR TRAVELER'S REST PERIOD CALCULATOR

Siegfried Johannes Gerathewohl, 5208 Albemarle St., Bethesda, Md.

Filed Aug. 11, 1970, Ser. No. 62,959

Int. Cl. G04b *37/00*

U.S. Cl. 235—88 **1 Claim**



A device are described for calculating the periods of rest necessary for the physical and mental well-being of an air traveler after long-distance flights. The device is basically a pocket-sized calculator consisting of two concentric discs and a pointer. The larger disc is subdivided in an outer and an inner ring. The outer ring is marked in 10 and 5 degree intervals which indicate the travel time in hours and half-hours, respectively. The center ring is marked to show the duration of the rest period in hours. The smaller disc bears the scales of the additional five parameters which determine the length of the rest period. The overlaying pointer, which can be rotated about the center of the device, provides for the reference setting of each parameter, for their summation, and for the reading of the final result.

3,681,573

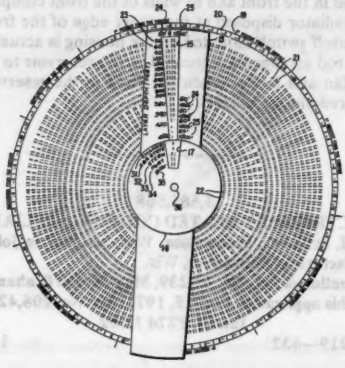
VARIABLE DEPTH SONAR RANGE PRODUCTION COMPUTER

Daniel Barron, 9326 Edmunston Rd., Greenbelt, Md.

Filed June 18, 1971, Ser. No. 154,572

Int. Cl. G06c *3/00*

U.S. Cl. 235—88 **2 Claims**



This disclosure is directed to a hand operated device for providing sufficient sonar range information for an anti-submarine warfare planner to properly select a transducer depth to be used and to provide the operator with the range of the day. The range selected is for snorkeling targets and targets operating at best depth.

3,681,574

APPARATUS FOR SERIALLY ENTERING INFORMATION INTO A SHIFT REGISTER

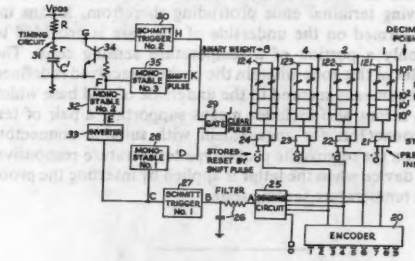
William Ernest Caulkin, Kingstanding, England, assignor to W & T Avery Limited, Birmingham, England

Filed March 30, 1970, Ser. No. 23,720

Claims priority, application Great Britain, April 3, 1969, 17,443/69

Int. Cl. H03k *23/02*

U.S. Cl. 235—92 SH **5 Claims**



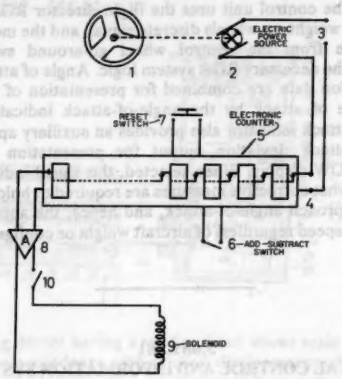
A circuit for serially entering information into a shift register which avoids the need to re-set the register with a previous or subsequent separate re-setting operation, comprising a sensing circuit responsive to each of a sequence of operations of an encoder, and a timing switch which is under the control of the sensing circuit so as to be operative on a operation of the encoder to clear from the shift register information related to a next preceding operation of the encoder after a pre-determined time interval has elapsed from this preceding operation.

3,681,575

TAPE POSITION MARKING AND SENSING DEVICE

Earnest C. Wolfe, Kanbe Mansion 1-B, Minami-Azabu 5-2-24, Minatu-ku, Tokyo, Japan

Filed July 22, 1969, Ser. No. 843,534
Int. Cl. H03k 21/36
U.S. Cl. 235—92 PE 1 Claim



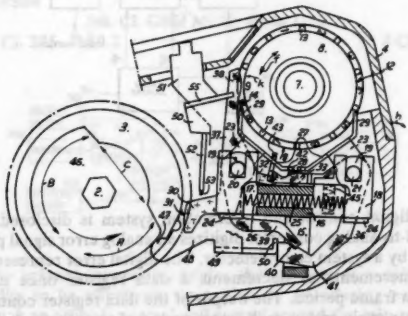
A tape recorder provided with a reversible predetermined electronic counter which functions to give a control signal used to stop the tape at a predetermined position.

3,681,576

TRANSFER AND RESET DEVICE FOR CALCULATING MACHINES

Andre Kolly, Geneva, Switzerland, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Aug. 17, 1970, Ser. No. 64,364
Claims priority, application Switzerland, Aug. 27, 1969, 12,964/69
Int. Cl. G06c 7/10
U.S. Cl. 235—133 R 8 Claims



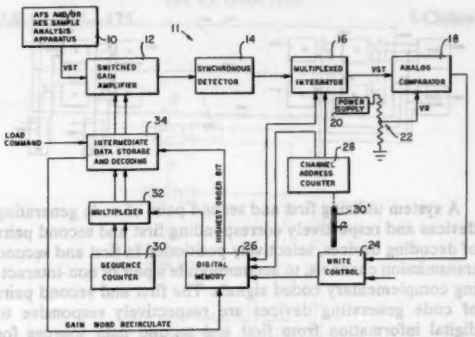
A calculating device device including an introduction device of the values and a storing device and a totalizer. Said totalizer comprises ciphered wheels driven in rotation through friction forces. The calculatingdevice comprises further a locking device hindering the revolution of the ciphered wheels, a setting to zero device and a carryover device in which the carryover is selected during the introduction of the values and completed during the rearming of the calculating device.

3,681,577

AUTOMATIC CALIBRATION APPARATUS

Donatas V. Gaslunas, Massapequa Park, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,538
Int. Cl. G06f 15/46
U.S. Cl. 235—151.3 13 Claims



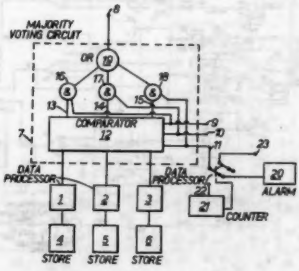
New and improved apparatus are provided for the automatic calibration of automatic, multiple channel sample analysis means and comprise level set means to automatically control the level of the analysis means analog output signals and maintain the latter within the same general operating range, zero set means to automatically determine the background signal level for each analysis channel and subtract the same from the analysis channel output signal, attendant the conversion thereof to digital form, and calibration means to vary the scale factor involved in said signal conversion in accordance with the operating characteristics of each of said analysis channels.

3,681,578

FAULT LOCATION AND RECONFIGURATION IN REDUNDANT DATA PROCESSORS

Arthur Dexter Stevens, Manningtree, England, assignor to The Marconi Company Limited, London, England

Filed Nov. 13, 1970, Ser. No. 89,203
Claims priority, application Great Britain, Nov. 21, 1969, 57,015/69
Int. Cl. G06f 15/16, 11/00
U.S. Cl. 235—153 4 Claims

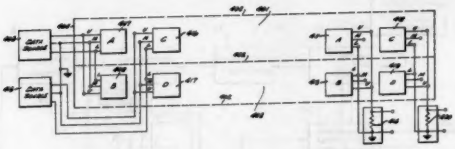


A data processing arrangement having three data processors, each with its own data store and each processing the same information is connected to a majority voting circuit. The majority voting circuit gives as an output that output of the majority of the processors. Whenever a processor output disagrees with the majority verdict above a predetermined disagreement rate an alarm is raised or the particular processor isolated. Also provided is a switch for rendering inoperative the alarm or isolating means until the rate of disagreement falls below a further predetermined level.

3,681,579
NON-INTERACTING COMPLEMENTARY CODING SYSTEM

Bernard P. Schweitzer, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 20, 1970, Ser. No. 82,246
Int. Cl. G06g 7/19
U.S. Cl. 235—181 **5 Claims**

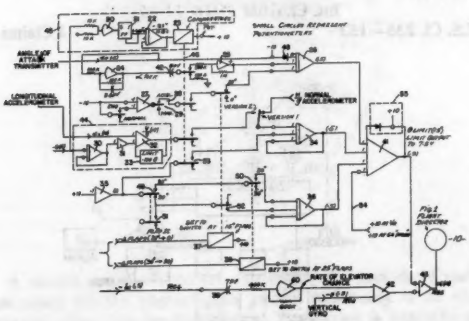


A system utilizing first and second pairs of code generating devices and respectively corresponding first and second pairs of decoding devices, selectively positioned in first and second transmission channels, to accommodate a pair of non-interacting complementary coded signals. The first and second pairs of code generating devices are respectively responsive to digital information from first and second data sources for causing first, second, third and fourth coded sequences to be selectively developed and propagated through the first and second transmission channels until the first, second, third and fourth coded sequences are selectively decoded by the first and second pairs of decoding devices, each decoding device being matched to a corresponding one of the coded sequences. The first and second pairs of decoding devices selectively combine the first, second, third and fourth coded sequences such as to enable the system to function as two independent and non-interacting signal channels.

3,681,580
ROTATION, CLIMBOUT, AND GO-AROUND CONTROL SYSTEM

Edward S. Gwathmey, and John M. Embree, both of Charlottesville, Va., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed Aug. 1, 1969, Ser. No. 846,737
Int. Cl. G06g 7/78; G01c 23/00
U.S. Cl. 235—150.22 **9 Claims**

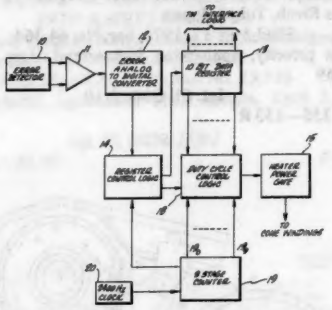


We call out system an RGA system which is an abbreviation for "ROTATION-GO-AROUND". Data concerning pitch, angle of attack, longitudinal acceleration, elevator position, and flap position are used by the RGA computer to compute the take-off and go-around vertical steering signal presented to a pitch steering display to show the pilot the necessary corrective measures to approach and/or hold a computed pitch attitude. Selection of RGA mode: (a) AC-CL, (accelerated climb); (b) MAX (maximum climb angle), and (c) EWO (Emergency War Order Operation) must be manually programmed by the pilot for a take-off. No manual programming is required for the go-around. The RGA Interface Unit processes the analog flap signals into discrete voltage steps, averages and cross-monitors the left and right angle of attack signals, and provides RGA vertical steering cross-monitoring in a dual system (for pilot and co-pilot). The RGA Control Unit provides the means by which the pilot selects the desired take-off climb operation and the approach speed deviation display. The control unit uses the flight director RGA mode voltage, a weight-on-wheels discrete signal, and the momentary voltage from the control wheel go-around switch to generate the necessary RGA system logic. Angle of attack and flap position data are combined for presentation of normalized angle of attack by the angle-of-attack indicator. The angle-of-attack indicator also provides an auxiliary approach-angle-of-attack deviation output for presentation on the FAST-SLOW display. When selected, this signal indicates to the pilot what corrective measures are required to hold the optimum approach angle-of-attack, and hence, the appropriate approach speed regardless of aircraft weight or configuration.

3,681,581
DIGITAL CONTROL AND INFORMATION SYSTEM

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Larry William Moede, Los Angeles, Calif.

Filed Dec. 31, 1969, Ser. No. 889,584
Int. Cl. G05d 23/00; G05b 11/42
U.S. Cl. 235—151.1 **7 Claims**



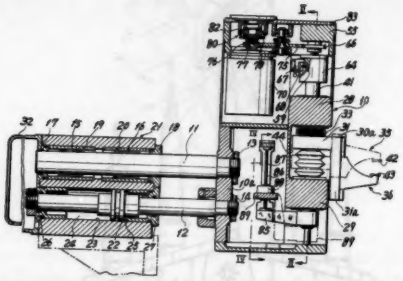
A digital control and information system is disclosed. A digital-to-analog converter digitizes an analog error signal provided by a system error detector. The digital error representation increments or decrements a data register once each system frame period. The output of the data register controls the duty cycle within each frame period of an actuator power gate. The data register at any given time, therefore, contains a digital number which both controls and represents the controlled parameter in a form suitable for transmission by telemetry apparatus. The control system may be commonly operated with a plurality of error detectors to provide a plurality of separate control loops. This is accomplished by time multiplexing the various error signals prior to the digitizing step and sampling the digitized output at times corresponding to the signal portion of interest. The sampled values update a plurality of data registers, one each associated with each control loop.

3,681,582

AUTOMATIC SIZING DEVICE WITH LINEAR SCALE

Kanou Kimio, Oobushi, and Nakamura Kelichi, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Nov. 3, 1970, Ser. No. 86,560
Claims priority, application Japan, Nov. 8, 1969, 44/89415
Int. Cl. G01b 7/12; G06f 7/46
U.S. Cl. 235—151.32 4 Claims



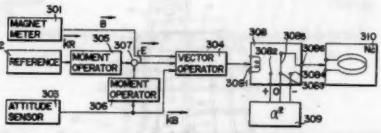
A sizing device having a reading head whose scale is moved linearly in accordance with relative displacement of a pair of measuring feelers simultaneously moved in opposite direction so as to be brought into diametric contact with a workpiece. Signals transmitted from the reading head are applied to a reversible counter which calculates the span between the feelers and whose count is compared by a comparator with a desired size stored in a register. The comparator generates a sizing signal at its output when the size of the span between the feelers accords with the desired size and this size is digitally indicated on an indicator.

3,681,583

DEVICE FOR CONTROLLING THE ATTITUDE OF A SPACE SATELLITE UTILIZING GEOMAGNETIC FIELD

Moritada Kubo, Tokyo; Masamichi Shigehara, Yokohama-shi, both of Japan, and Shozo Yasui, Cambridge, Mass., assignors to Tokyo Shibaura Electric Co., Ltd., Horikawa-cho, Kawasaki-shi, Japan

Filed Sept. 22, 1969, Ser. No. 859,823
Claims priority, application Japan, Sept. 27, 1968, 43/69504
Int. Cl. G06f 15/50; B64g 1/10
U.S. Cl. 235—150.2 4 Claims



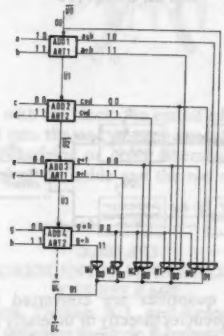
The present invention enables the attitude of a spinning satellite to be effectively controlled by introducing current through an attitude control coil wound around the spin axis so as to allow the spin axis to be oriented to the desired direction on the basis of the interaction between coil current and the geomagnetic field. The direction and magnitude of current to be introduced into said attitude control coil is determined by composing a switching function $S = E \cdot (k_B \times B)$ using a vector operator from the vector B of an earth's magnetic field measured by a magnetometer, the vector K_B of the direction of the spin axis of the satellite supplied by an attitude sensor and an error vector E corresponding to the difference between the spin axis and desired direction as supplied by an error detector and then defining the notation and magnitude of the resultant function S.

3,681,584

CARRY TRANSFER CIRCUIT FOR A PARALLEL BINARY ADDER

Gerhard Wolf, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 3, 1970, Ser. No. 69,308
Claims priority, application Germany, Sept. 25, 1969, P 19 48 604.5
Int. Cl. G06f 7/50
U.S. Cl. 235—175 3 Claims



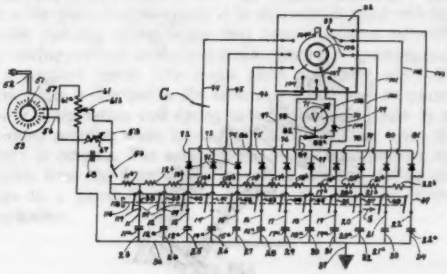
A negated group transfer is provided with the aid of NOR circuits while maintaining a minimum of delay time. A plurality of NOR circuits are assigned to a like plurality of adder stages and each operated by the disjunctive output of the assigned adder stage and the equivalent outputs of all higher value adder stages. An additional NOR circuit is operated by the equivalent outputs of all adder stages and a transfer signal from a lower value group. All NOR circuits have commonly connected outputs to provide a group transfer output to the next group.

3,681,585

ANALOG COMPUTER FOR DECOMPRESSION SCHEDULES

Gary P. Todd, 1716 Mark Lane, Charleston, S.C.

Filed Feb. 24, 1970, Ser. No. 13,629
Int. Cl. G06g 7/60
U.S. Cl. 235—184 9 Claims



A device for computing a diver's decompression schedule which comprises a variable voltage D.C. power supply connected to the leading set of a plurality of resistor capacitor sets serially connected in electrical cascading relationship. Metering means are connected to at least a majority of the sets for indicating the highest voltage of the capacitors of the sets, both the metering means and power supply being calibrated in units of water depth for cascade charging the capacitors sequentially with time at a voltage corresponding to the time

and depth of the dive and for cascade discharging of the capacitors sequentially with time to thereby produce a readout on the metering means to provide an ascent schedule for the diver.

3,681,586

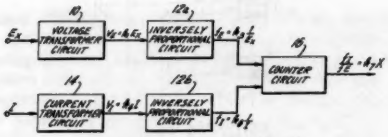
PRODUCT/QUOTIENT DERIVING SYSTEM

Kouichi Kitaura, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed March 3, 1970, Ser. No. 16,167

Int. Cl. G06q 7/16

U.S. Cl. 235—195 **5 Claims**



Two electrical quantities are converted to sawtoothed signals having frequencies directly or inversely proportional to their magnitudes respectively. The number of sawtoothed waves occurring in one of the signals during one period of the other signal are counted to provide a product or a quotient of the electrical quantities. Alternatively, the electrical quantities may be converted to pulse trains having repetition rates corresponding to their magnitudes and counted in terms of the number of pulses.

3,681,587

WRIST WATCH WITH DIAL ILLUMINATING DEVICE

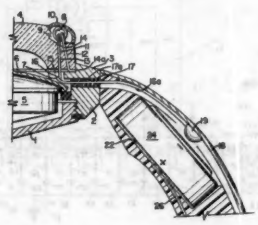
Andre N. Brien, 3110 rue Germain, Fabreville, Quebec, Canada

Filed April 23, 1970, Ser. No. 31,251

Claims priority, application Switzerland, April 30, 1969, 6567/69

Int. Cl. G01d 11/28

U.S. Cl. 240—2.1 **5 Claims**



A wrist watch has an electric bulb for illuminating the dial and a battery lodged in a housing independent of the watch movement housing and having an elastically mounted cover. Electrical circuit means for connecting the battery to the bulb include a switch operable to illuminate the dial by a pressure exerted on the cover by the wrist upon which the watch is worn.

3,681,588

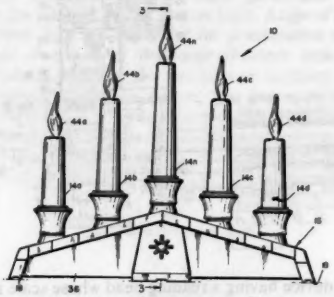
CANDELABRUM AND LIGHT TRANSMITTING MEANS THEREFOR

Norman C. Lee, Rocky Mount, N.C., assignor to Carolina Enterprises, Inc., Tarboro, N.C.

Filed Nov. 16, 1970, Ser. No. 89,863

Int. Cl. F21p 1/02; F21s 5/00

U.S. Cl. 240—10 B **11 Claims**



A light transmitting saddle at least partially surrounds a single light source. A plurality of light pipes formed integrally with the saddle transmits the energy from the light source to flame-simulating tips.

3,681,589

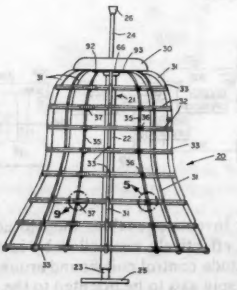
ELECTRICALLY ENERGIZED DECORATIVE SUPPORT APPARATUS

John F. Roberts, Plymouth, Pa., assignor to John F. Roberts; Harry C. Fine, 2nd and Karl Landmesser, Jr.

Filed June 3, 1971, Ser. No. 149,607

Int. Cl. F21p 1/02; F21s 7/00; F21v 21/08

U.S. Cl. 240—10.1 **6 Claims**



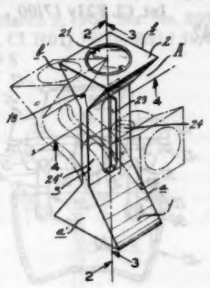
A decorative device having an electrified rotating frame, the frame supported by a spring biased support pole and powered by an electric motor housed on the rotating frame and energized through slip rings on the support pole. The frame member comprises a plurality of horizontal rings supported by vertical frame members, the rings having a pair of energized electrical conductors, and adapted for carrying a plurality of ornamental electrical bulbs.

3,681,590

MOLDED LAMP

George Dickie, 7536 Cornell, University City, Mo.

Filed May 8, 1970, Ser. No. 35,679
Int. Cl. F21l 15/20; F21v 21/32
U.S. Cl. 240—10.5 3 Claims



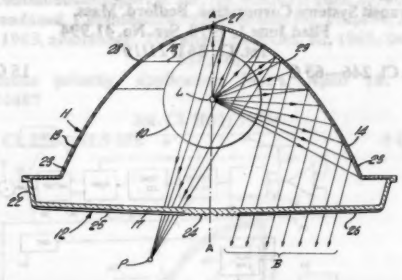
A lamp integrally molded from a synthetic resin to present a rigid base, a rigid head, and a flexible intermediate portion whereby said head may be disposed in desired relationship to said base through flexing or bending of said intermediate portion. Provided within said intermediate portion are flexible stiffening members for retaining said intermediate section in flexed condition, resisting any memory induced property of the material to return to initial position. A bulb is carried in said head and the base is adapted to receive either batteries or to accommodate a conductor cord.

3,681,591

LIGHT FIXTURE FOR A STORAGE AISLE

Charles H. Loch, Newark, Ohio, assignor to Holophane Company, Inc., New York, N.Y.

Filed Jan. 5, 1971, Ser. No. 104,040
Int. Cl. F21v 13/04
U.S. Cl. 240—41.3 R 4 Claims



Light fixture for a storage aisle, particularly a warehouse aisle. A lamp is provided with a reflector generally overlying it and wrapped around two sides of the lamp region. An underlying lens, together with the lamp and reflector, distributes light uniformly over the sides of the aisle, while avoiding glare, and preferably limiting illumination of the aisle floor.

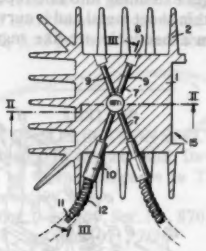
3,681,592

LUMINOUS ENERGIZER FOR FIBER-OPTICAL CABLES

Max Hugelshofer, Dietlikon, Switzerland, assignor to Firma Ernie & Co., Stationsstrasse, Bruttisellen, Switzerland

Filed July 14, 1969, Ser. No. 841,465
Int. Cl. F21v 29/00; G02b 5/16
U.S. Cl. 240—47 1 Claim

A luminous energizer for a plurality of fiber-optical cables comprises an aluminum heat-sink block formed with external cooling fins and a chamber closely receiving a halogen lamp. A plurality of passages in the block are aligned transversely of the lamp filament and lie in a common plane therewith. Each passage is provided with a light-conducting rod in heat-transferring relation with the block. An end of a fiber-optical cable can be plugged into the end of each passage to receive light from the rod. Polarizing or color filters may be interposed between the end of the cable and the rod or otherwise built into the block.

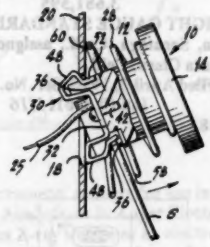


3,681,593

SNAP-IN FLUORESCENT LAMPHOLDER WITH FRONT END RELEASE

John M. Genovese, Trenton, N.J., and Kenneth H. Walterick, Ottsville, Pa., assignors to Circle F Industries, Inc., Trenton, N.J.

Filed Nov. 5, 1970, Ser. No. 87,047
Int. Cl. H05b 33/02
U.S. Cl. 240—51.11 R 3 Claims



A compressible lampholder for double ended fluorescent lamps, especially those of the high-output, rapid-start type, has a one-piece mounting clip at its rear end, formed with forwardly opening spring loops that have shoulders normally preventing removal of the lampholder from the mounting hole of a support panel. The loops yield resiliently when the lampholder is inserted in the mounting panel, and cooperate with a compression coil spring to hold the lampholder in its mounted position while leaving it free to compress when the fixture is lamped. The spring loops have distal portions accessible from the front of the mounting panel to deflect the loops to a panel-disengaging position for removal of the lampholder.

3,681,594

LAMPHOLDER MOUNTING ASSEMBLY WITH CAPTIVE NUT

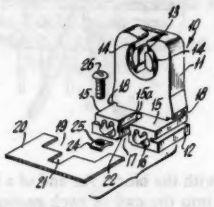
George E. Johnson, Bronxville, N.Y., assignor to Leviton Manufacturing Co., Inc., Brooklyn, N.Y.

Continuation of Ser. No. 817,125, April 17, 1969, abandoned.
This application March 16, 1971, Ser. No. 124,965
Int. Cl. H01r 33/08; F16b 29/00; 39/24
U.S. Cl. 240—51.11 12 Claims

A mounting assembly to be used in securing a lampholder to a fixture panel. The lampholder has a base with spaced legs ex-

tending forwardly therefrom and defining a slotted opening therebetween with opposing faces of the legs having recesses which extend lengthwise thereof.

A retaining nut extends across said slotted opening with its opposite side edges extending into said recesses. The retaining nut is formed of thin sheet metal and is curved in its lengthwise direction to form a bendable arc-like segment. The arc-like

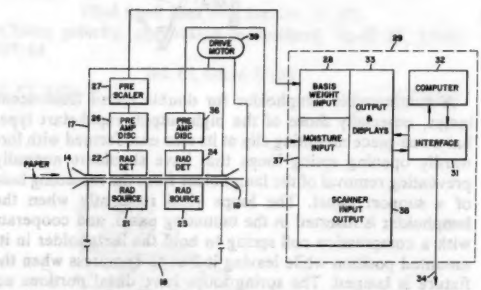


segment, as formed has an overall thickness greater than the width of the recess in the opposing faces of the legs whereby the side edges of the retaining nut are held under compression between opposing surfaces of the recesses when inserted therein. A retaining screw extends into the slotted opening between the legs and engages with a threaded opening in the retaining nut.

3,681,595
BASIS WEIGHT GAUGE STANDARDIZING SYSTEM

Erik B. Dahlin, Saratoga, Calif., assignor to Measurex Corporation, Santa Clara, Calif.

Filed April 3, 1970, Ser. No. 25,385
Int. Cl. G01t 1/16
U.S. Cl. 250—83 C 9 Claims

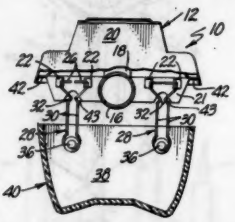


A method for standardizing a basis weight gauge which includes the calibration steps of obtaining two calibration curves, one of which is displaced from the other by a dirt simulation technique. The displacement between the two curves is expressed as a third curve. A standard sample of a predetermined basis weight is inserted in the radiation path to provide a standard shift in conjunction with the dirt simulation to provide a reference value for the displacement function curve. During actual use of the basis weight gauge standardization is provided by relating a current standard shift to the initial standard shift to correct the displacement function curve which is then related back to the original calibration curve to provide the actual basis weight of the sheet material being measured.

3,681,596
LIGHTING FIXTURES

Jack G. Taylor, West Covina, and Mario S. Gallo, La Mirada, both of Calif., assignors to Globe Illumination Company, Gardena, Calif.

Filed June 4, 1971, Ser. No. 149,992
Int. Cl. F21v 17/00
U.S. Cl. 240—147 5 Claims

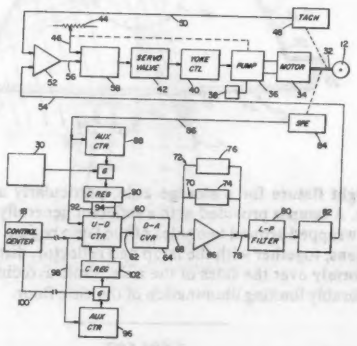


A lighting fixture having a lamp housing, a lamp within the housing, and a diffuser or lens structure for enclosing the bottom of the housing can be constructed utilizing wire-like hangers or clips for supporting and mounting the diffuser. Each of such clips preferably includes two wire sides connected together at a round bottom and having a necked-down or restricted portion between its ends and a top adapted to be mounted on a support. These clips or hangers are used at the ends of the housing so that headed necks on the lens or diffuser fit within them. The sides of these clips or hangers are sufficiently resilient to allow the necked-down portions of them to be expanded to pass the headed necks in moving the lens or diffuser between a normal operating, closed position and other positions in which the interior of the fixture is accessible.

3,681,597
TRANSPORTATION SYSTEM

Richard E. Morley, Bedford; Eugene M. Weiss, Needham Heights; Robert R. Moline, Braintree, and Michael P. Greenberg, Winchester, all of Mass., assignors to Alden Self-Transit Systems Corporation, Bedford, Mass.

Filed June 1, 1970, Ser. No. 41,994
Int. Cl. B61l 21/10
U.S. Cl. 246—63 C 15 Claims

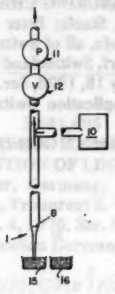


A vehicle has propelling means for propelling the vehicle along a track, a digital-to-analog converter for producing propulsion control signals for application to the propelling means, means for applying digital propulsion control signals to the converter, and means for modifying applied digital signals as a function of signals representative of actual changes in vehicle position and signal representative of apparent changes in vehicle position.

3,681,598
SAMPLING DEVICE FOR MASS SPECTROMETRIC ANALYSIS

Warren M. Thurston, Deep River, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed March 3, 1969, Ser. No. 803,635
Int. Cl. H01j *39/34*; B01d *59/44*
U.S. Cl. 250—41.9 S **4 Claims**

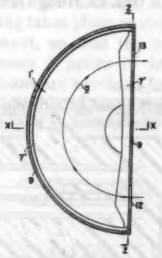


A device for vaporizing a liquid for analysis, consisting of a tubular member having an inlet with a reduced bore and a tapered evaporation portion, and is connected with a vacuum source and mass spectrometer. The device facilitates the automated analysis of a large number of samples.

3,681,599
SECTOR-TYPE CHARGED PARTICLE ENERGY ANALYZER

Kenji Takumi, Tokyo-to; Hisashi Yamamoto, Sagamihara-shi, and Hidetsugu Ikegani, Yokohama-shi, all of Japan, assignors to Kabushiki Kaisha Hitachi Seisakusho, Tokyo-to and Hidetsugu Ikegani, Yokohama-shi, Japan, part interest to each

Continuation-in-part of Ser. No. 468,057, June 29, 1065, abandoned, Continuation-in-part of Ser. No. 272,490, April 11, 1963, abandoned. This application Oct. 22, 1969, Ser. No. 868,646
Claims priority, application Japan, April 16, 1962, 37/14487
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 ME **6 Claims**

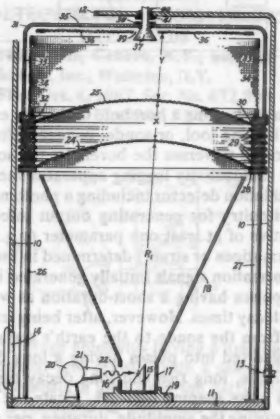


A sector-type charged particle energy analyzer has a pair of mutually confronting sector-type magnetic poles and an incident opening through which charged particles to be analyzed are projected to the inner part of the analyzer from its outer part formed in the gap between the magnetic poles. The outer energizing coil is wound, within a gap between the pair of magnet poles, flatly expanded in a direction perpendicular to the symmetrical plane of the magnetic poles so as to render uniform the distribution of the magnetic field in the gap between the magnet poles, and, at the same time, this outer energizing coil is divided into upper and lower parts at the position of the incident opening to render it possible to increase as much as feasible the incident angle of the charged particles projected into the inner part of the anaylzer thereby increasing the analytical performance of the charged particle analyzer.

3,681,600
RETARDING FIELD ELECTRON SPECTROMETER

Jameson Dane Rigden, Westport, and David A. Huchital, Trumbull, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 24, 1969, Ser. No. 870,490
Int. Cl. H01j *37/26*
U.S. Cl. 250—49.5 A **22 Claims**



An electron spectrometer suitable for use in Electron Spectroscopy Chemical Analysis, or in Auger Electron Spectroscopy employs either an X-ray source or an electron beam source for exciting electrons from the surface of a test sample in vacuum. A substantial free drift path through a wide spherical angle is provided for ejected electrons, together with a pair of spaced apart spherically shaped retarding potential grids having a plurality of fringing field correction rings therebetween and the situs of a test sample as the center of their curvature, a cylindrical pot-shaped general electron integral current collector anode lined with a negatively biased screen grid secondary electron repeller, and a small conically shaped selective electron, differential current collector insulatingly passed through a central coaxial opening in the anode and connected to an electron multiplier output. The entire structure is enclosed in a vacuum within an external ferromagnetic casing which provides both electrostatic and electromagnetic shielding. Additionally an external magnetic shield is employed, or Helmholtz coils may be used, to reduce stray magnetic fields to not more than 10 milligauss. The device accommodates relatively large test samples, employs no input or output slits and hence provides a substantially greater signal level than prior spectrometers, and is capable of high resolution of the order of 0.04 percent.

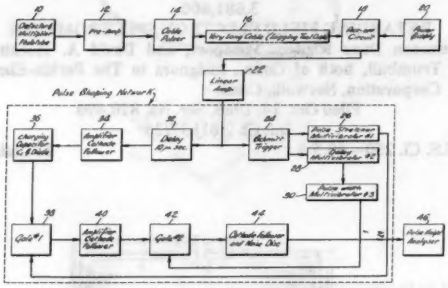
ERRATUM

For Class 250—83 see:
Patent No. 3,681,595

3,681,601
WELL LOGGING SYSTEM

Hans J. Paap; Robert W. Pitts, and Allen H. Mueller, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 641,853, May 29, 1967, abandoned.
This application June 1, 1970, Ser. No. 41,728
Int. Cl. G01v 5/00; G01t 1/17
U.S. Cl. 250—83.3 R 3 Claims

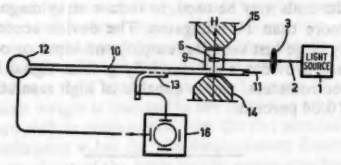


A system for logging a borehole traversing earth formations wherein a logging tool, or sonde, connected to the end of an electrical cable traverses the borehole; the sonde containing nuclear or radioactivity logging apparatus such as, for example, a scintillation detector including a photomultiplier and associated circuitry for generating output information signals representative of at least one parameter (e.g., nature of subsurface formations or strata) determined in the borehole. The output information signals initially generated in the sonde are electrical pulses having a short-duration as well as short rise and short decay times. However, after being transmitted along the cable from the sonde to the earth's surface these pulses become distorted into pulses having a long duration attenuated amplitude, long rise and long decay times. Herein disclosed is a pulse shaping network, located at the earth's surface, to restoring the amplitude, duration, rise and decay times of the pulses so that the reshaped pulses can be fed to, inter alia, a pulse height analyzer whereby useful logging information may be derived from the reshaped pulses in correlation with the depth of the sonde in the borehole.

3,681,602
DEVICE FOR DETECTING AND RECORDING ELECTROMAGNETIC RADIATION INCLUDING AN ACTIVE MAGNETIC ELEMENT A PARAMETER OF WHICH CAN BE CHANGED BY THE RADIATION

Richard William Teale, Sheffield, Yorkshire, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 756,999, Sept. 3, 1968, abandoned.
This application Oct. 19, 1970, Ser. No. 81,856
Claims priority, application Great Britain, Sept. 8, 1967, 41,190/67
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 R 7 Claims

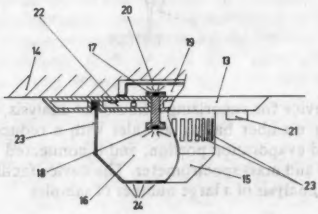


A device for detecting and/or recording electromagnetic radiation which employs as an active element one which responds to the electromagnetic radiation by changing a magnetic parameter thereof such as anisotropy, coercivity or permeability. The active element contains metal ions of which two different energy states as regards a free electron can exist. Ions in one state can absorb energy from electromagnetic radiation to transfer across an energy threshold to the other energy state.

3,681,603
SMOKE DETECTOR WITH AT LEAST ONE SMOKE MEASURING CHAMBER

Andreas Scheidweiler, Staefa; Peter Muller, Oetwil Am See, and Max Kuhn, Staefa, all of Switzerland, assignors to Cerberus AG, Mannedorf, Switzerland

Filed May 18, 1970, Ser. No. 38,056
Claims priority, application Switzerland, May 19, 1969, 7607/69
Int. Cl. G01t 1/18
U.S. Cl. 250—83.6 FT 16 Claims

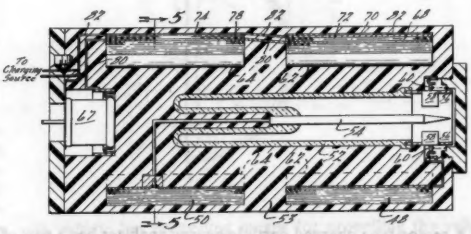


A device for the detection of smoke or combustion aerosols comprising a supporting member for attachment to the ceiling of a room and a housing dependent therefrom enclosing a detection chamber. This housing is provided with openings for the entry of the ambient or surrounding atmosphere into the confines of the smoke detection chamber. These openings are arranged in two different zones, wherein the opening or openings in an upper zone are spaced at a maximum of 20 mm. from the room ceiling upon which the device is to be mounted and the opening or openings in the lower zone are arranged at the underside or bottom of such housing.

3,681,604
PORTABLE X-RAY GENERATING MACHINE

Daryl L. Criswell, and Clarence V. Sebold, both of Ann Arbor, Mich., assignors to The Bendix Corporation

Filed Aug. 17, 1970, Ser. No. 64,485
Int. Cl. H05g 1/24
U.S. Cl. 250—93 15 Claims



A portable X-ray generating machine having an X-ray tube and two spiral generator power sources connected to each other and to the X-ray tube. One generator supplies a positive potential to the anode of the X-ray tube, and the other generator supplies a negative potential to the cathode of the X-ray tube. A potential drop is thus provided across the X-ray tube

during operation that is approximately twice as large as the potential output of any one spiral generator. A number of embodiments illustrating different arrangements of the X-ray tube and spiral generator elements are illustrated and described. The various embodiments include different configurations of material having a high magnetic permeability placed about the spiral generators. This material increases the output of the generators from that which could be obtained if no such material were present, and in at least one embodiment also increases the safety of the device by preventing the induction of a current in any element in the vicinity of the X-ray generating machine that could be potentially harmful to an operator.

3,681,605

PHOTOELECTRIC DEVICE FOR THE DETERMINATION OF THE POSITION OF LINE MARKINGS

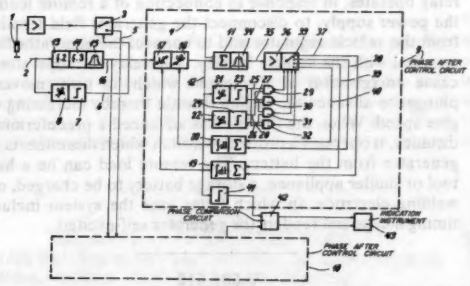
Walter Schmitt, Egerer, Germany, assignor to Firma Dr. Johannes Heidenhain, Traunreut b. Traunstein, Germany

Filed Aug. 4, 1970, Ser. No. 60,842

Claims priority, application Germany, Aug. 6, 1969, P 19 39 901.0

Int. Cl. G01d *5/36;* **G01b** *11/00;* **H01j** *39/12*

U.S. Cl. 250—206 **4 Claims**



A photo-electric device for the determination of the position of line markings with a swinging element in a way path, through which a light stream impinging upon a photo-electronic element is periodically varied, which comprises a swinging element and a switch controlled by the movement of the swinging element. A photo-electronic element emits and electric output signal. Two channels are provided and the switch connects alternately the electric output signal with one of the channels. The switching takes place at about the turning point of the swinging element, so that the reciprocation of the swinging element causes a series of impulses in the two separate channels. Means are provided for the determination of the relative phase position of two harmonic oscillations of equal frequency, contained in each of said series of said impulses.

3,681,606

IMAGE INTENSIFIER USING RADIATION SENSITIVE METALLIC SCREEN AND ELECTRON MULTIPLIER TUBES

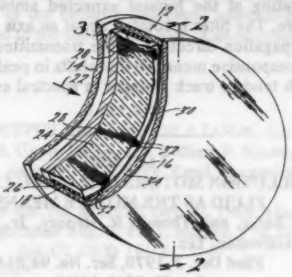
Joseph Tinney, Livermore, Calif., assignor to The Bendix Corporation

Filed April 10, 1969, Ser. No. 815,010

Int. Cl. H01j *31/50*

U.S. Cl. 250—213 VT **12 Claims**

A radiation image intensifier having a metallic screen such as a lead screen to convert a radiation image into a corresponding electron image in combination with an electron multiplier array for amplifying the electron image.



3,681,607

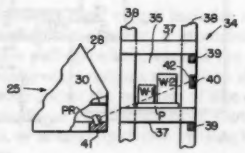
LOAD DETECTOR FOR AUTOMATIC STORAGE APPARATUS

Elmer C. Hartman, III, Geneva, N.Y., assignor to Hartman Metal Fabricators, Inc., Waterloo, N.Y.

Filed Oct. 4, 1967, Ser. No. 672,893

Int. Cl. G06m *9/00*

U.S. Cl. 250—222 R **1 Claim**



In automatic storage apparatus having a load carrier movable under command into registry with a selected bin of the storage rack to transfer a load from the carrier to the bin, a reflector disk is mounted in the back of each bin, and a photoelectric cell is mounted on the carrier to receive reflected light from the disk. When a bin already contains a load the load will block off the reflector so that the cell will not be energized, and the transfer mechanism, which would ordinarily be actuated upon energization of the cell, will not be actuated, so that the mechanism will not attempt to transfer a new load into the already loaded bin.

3,681,608

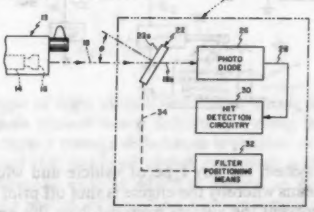
LASER BEAM RECEIVER HAVING A HIGH SIGNAL TO NOISE RATIO

George Derderian, Maitland, and Denis R. Breglia, Altamonte Springs, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy

Filed March 17, 1971, Ser. No. 125,160

Int. Cl Gold *5/34*

U.S. Cl. 250—231 R **5 Claims**



A receiver in a weapon fire simulator system including a gallium arsenide laser utilizes a relatively narrow band-pass filter

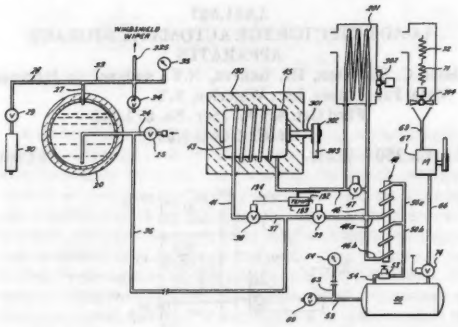
whose spectral transmittance peaks in the spectral region corresponding to the spectral emission of the gallium arsenide laser operating at the highest expected ambient operation temperature. The filter is rotated about an axis perpendicular to the propagation direction of the transmitted radiation by thermally responsive means so that shifts in peak transmission wavelength tend to track changes in spectral emission of the laser.

3,681,609

NON-POLLUTION MOTORS INCLUDING CRYOGENIC FLUID AS THE MOTIVE MEANS

Harold L. Boese, and Thomas R. Hencey, Jr., both of 1509 Strand, Galveston, Tex.

Filed Dec. 3, 1970, Ser. No. 94,814
Int. Cl. F01k *15/02*
U.S. Cl. 290—2 **8 Claims**



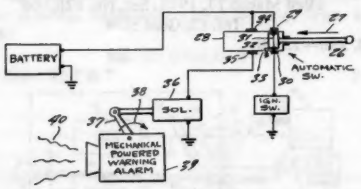
Non-pollution motors wherein liquid nitrogen is evaporated to drive a gas motor, the gas motor driving an alternator (electrical generator) the output from which is used to drive an electric drive motor which may be used to propel an automotive vehicle or may be used to drive any other equipment. The electric drive motor is operated at reduced temperature so that its operating characteristics are greatly improved.

3,681,610

SAFETY SWITCH

Jack R. Pratt, 12271 Barrs Rd., S.W., Massilon, Ohio

Filed April 21, 1971, Ser. No. 136,041
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 R **1 Claim**



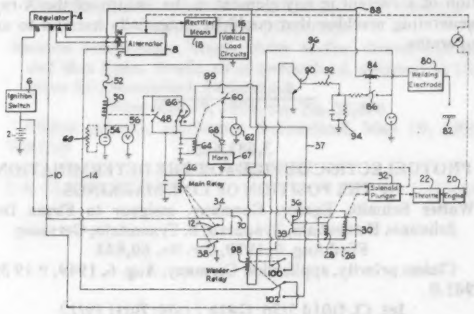
A safety system for any type of vehicle and which incorporates a means whereby the engine is shut off prior to a collision so to prevent the vehicle from catching fire and exploding, the device also including a four alarm system which at the same time is activated so to warn and notify other persons so that help can be summoned.

3,681,611

VEHICULAR REMOTE POWER SUPPLY SYSTEM

Fred A. Watson, Boise, Idaho, assignor to Soltronics, Inc., Boise, Idaho

Continuation-in-part of Ser. No. 91,316, Nov. 20, 1970, Pat. No. 3,614,459. This application May 26, 1971, Ser. No. 146,992
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 R **14 Claims**



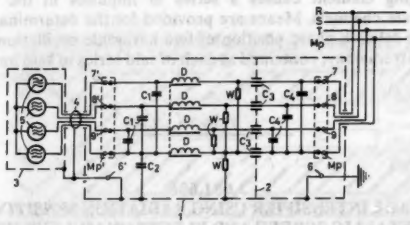
A vehicular remote power supply including a main relay connected to the field terminal of the vehicle generator which relay operates, in response to connection of a remote load to the power supply, to disconnect the generator field terminal from the vehicle regulator and to connect the generator field terminal with the vehicle battery. The relay also operates to cause energization of a solenoid which, in turn, moves a plunger to advance the engine throttle thereby increasing engine speed. When the throttle has advanced a predetermined distance, it operates a protective switch which disconnects the generator from the battery. The remote load can be a hand tool or similar appliance, a storage battery to be charged, or a welding electrode, in which latter case the system includes timing means and renders the generator self-excited.

3,681,612

DEVICE FOR ELIMINATING INTERFERENCE BETWEEN CONDUCTORS OF HIGH FREQUENCY SIGNALS

Willibald Vogl, Munchen; Johann Kinzler, and Gottfried Goessl, both of Regensburg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 16, 1971, Ser. No. 153,686
Claims priority, application Germany, June 19, 1970, P 20 30 360.0
Int. Cl. H02j *1/02*
U.S. Cl. 307—105 **8 Claims**



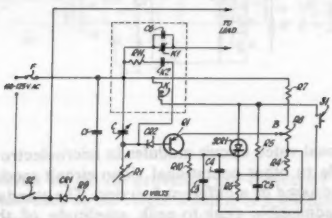
A device for eliminating interference between conductors which carry high frequency signals to main supply lines. The device has a metallic housing divided into first and second chambers. The conductors pass through the housing longitudinally and connect to the main supply lines. Highly inductive coils are coupled in series with the conductors in the first

chamber, and relatively large value capacitances are coupled from a return conductor to the other respective conductors in both the first and the second chambers. Feed through capacitors are coupled from the housing to each conductor at the partition which divides the housing into the first and second chambers. Also, large resistors are coupled from the return conductor to each other conductor.

3,681,613
TIMING CIRCUIT

Robert A. Flieder, Englewood Cliffs, N.J., and Louis L. Weisglass, New York, N.Y., assignors to Berkey Photo, Inc., New York, N.Y.

Filed May 28, 1970, Ser. No. 41,294
Int. Cl. H01h 3/34
U.S. Cl. 307—141.4 **15 Claims**

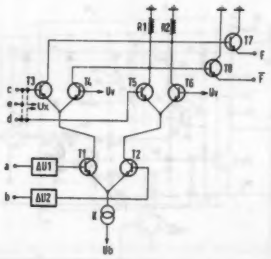


Timing circuit including a R-C circuit connected in parallel with a voltage divider across a direct current supply. Voltage sensing means is connected between the midpoints of the R-C circuit and the voltage divider. Upon the occurrence of equal voltages at these points the timed interval is completed. The circuit is operative under variations in magnitude of the supply voltage.

3,681,614
ECL GATE SWITCHING NETWORK

Friedrich-Karl Kroos, Soecking, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 4, 1971, Ser. No. 112,717
Claims priority, application Germany, Feb. 6, 1970, P 20 05 576.9
Int. Cl. H03k 19/00, 17/00
U.S. Cl. 307—203 **5 Claims**

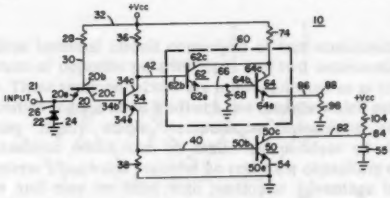


An ECL gate switching network having a "lower" and a pair of "upper differential amplifiers, each comprising a pair of transistors, in which each of the transistors of the "lower" amplifier is in a series circuit with a respective "upper" amplifier and a constant current source, each of the "upper" amplifiers having direct control at only one side thereof, and the "lower" amplifier having direct control at both sides thereof, the output sides of the respective directly controlled transistors of the "upper" amplifiers each being connected to the output side of the indirectly controlled transistor of the other of said "upper" amplifiers, each pair of connected output sides forming an output side of the network and being respectively operatively connected to the appropriate side of an operational voltage source.

3,681,615
SPLIT OUTPUT CIRCUIT FOR A LOGIC GATE

Vincent C. Ricci, Upper Darby, and William F. Simon, Ambler, both of Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Continuation of Ser. No. 868,432, Oct. 22, 1969, abandoned. This application Aug. 9, 1971, Ser. No. 170,351
Int. Cl. H03k 19/34, 19/40
U.S. Cl. 307—214 **3 Claims**

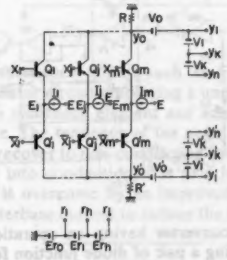


A transistor-transistor-logic circuit includes an input stage transistor, a phase-splitter element, a grounded emitter element, and an active pull-up circuit, wherein the active pull-up and grounded emitter stage outputs are split to allow wire ORing by tying together either the emitters of like outputs of active pull-up elements, or the collectors of grounded emitter elements, or both, or normal operation by tying together emitters and collectors.

3,681,616
LOGIC CIRCUITS

Ryoichi Mori; Hiroaki Tajima; Yoshio Tsuji, and Noriaki Sanechika, all of Tokyo-to, Japan, assignors to Kogyo Gijutsuin, Tokyo-to, Japan

Filed Oct. 31, 1969, Ser. No. 872,824
Claims priority, application Japan, Nov. 1, 1968, 43/79330
Int. Cl. H03k 17/00
U.S. Cl. 307—218 **1 Claim**



A novel type of logic circuit, the output binary logic functions or signals thereof being defined according to whether each of the output voltage differences is positive or negative, is so organized that the logic circuit comprises a plurality of current switches to each of which is applied an input signal composed of a pair of voltages, and a binary output of 0 and 1 is delivered therefrom, at most two circuit elements wherein the binary outputs from said plurality of current switches are added in a linear manner, a plurality of circuit positions the potentials of which are in a linear relation to the resultant volt-

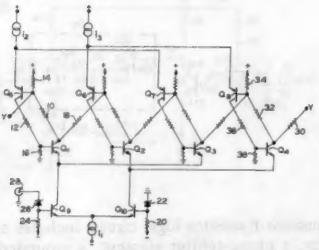
age obtained in said circuit elements, and means for producing voltage differences between said plurality of circuit positions, whereby a plurality of said binary logic functions or signals are simultaneously obtained. In another aspect, a plurality of reference potentials may also be provided, and the voltage differences between any of said plurality of circuit positions and said plurality of reference potentials may be employed as the outputs of the logic circuit.

3,681,617

MULTISTABLE CIRCUIT INCLUDING ELEMENTS PRESET FOR CONDUCTION

Hiro Moriyasu, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 21, 1969, Ser. No. 792,501
Int. Cl. H03k *23/08, 23/22, 3/26*
U.S. Cl. 307—225 **17 Claims**



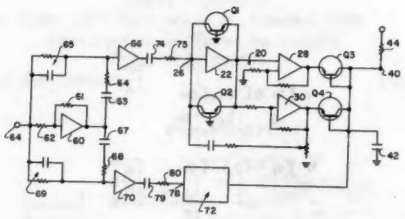
A multistable circuit includes a plurality of latching pairs, each preferably comprising transistors connected in a feedback circuit. Each latching pair is coupled to a transistor of the next latching pair. for presetting such transistor for conduction. The latching pairs alternately receive current from a current switching means, and when the current is switched, the latching pair having the preset transistor immediately conducts.

3,681,618

RMS CIRCUITS WITH BIPOLAR LOGARITHMIC CONVERTER

David E. Blackmer, Bulton Rd., Harvard, Mass.

Filed March 29, 1971, Ser. No. 128,756
Int. Cl. G06g *7/24*
U.S. Cl. 307—229 **13 Claims**



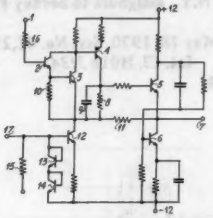
A logarithmic converter having an operational amplifier input stage including a pair of diode junction feedback loops of opposite polarities. The converter includes a pair of fixed gain amplifiers connected to amplify the respective outputs of opposite polarities from the operational amplifier, and a corresponding pair of rectifiers for respectively half-wave rectifying the outputs of the fixed gain amplifiers. The outputs of the rectifiers are summed with one another. Lastly, the converter includes a source of constant current and a capacitor coupled to the source and to the rectifier outputs so that the voltage across the capacitor will tend to bring the long term average sum of the output currents from the rectifiers into equality with the current from the source.

3,681,619

OPERATIONAL VIDEO CIRCUIT MODULES

Maurice A. Remy, Clamart, France, assignor to The Office de Radio-Diffusion-Television Francaise, Paris, France

Filed Feb. 4, 1972, Ser. No. 112,720
Claims priority, application France, Feb. 6, 1970, 7004303
Int. Cl. H03k *17/00*
U.S. Cl. 307—237 **5 Claims**



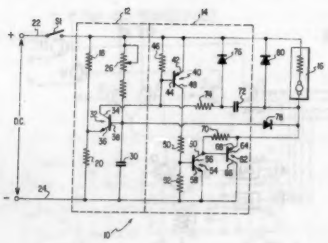
Operational video circuit modules in microelectronic form connectable to other operational video circuit modules performing the same or a different function. The standards concern the admissible peak-to-peak amplitude of the video signals (1 volt), the direct current component amplitude 0.5 volt, the stray direct current output (5 millivolts) for a zero direct current input. Means are provided for cancelling the stray direct current output in each module by means of a temperature-compensated current injector transistor feeding an impedance (resistance or transistor) connecting said injector transistor to the output circuit.

3,681,620

VARIABLE FREQUENCY CONTROL CIRCUIT

Henri H. Hoge, Baltimore, Md., assignor to Rhomega System, Incorporated

Filed April 17, 1970, Ser. No. 29,494
Int. Cl. H03k *1/10*
U.S. Cl. 307—271 **9 Claims**



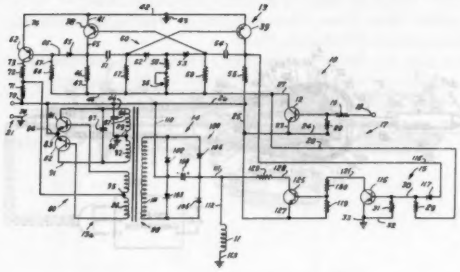
A variable frequency pulse generator is employed to control the frequency of a monostable multivibrator which provides drive pulses of a constant pulse width to a D.C. load. Discharge circuits are provided to discharge a capacitor in the pulse generator during the operation of the multivibrator and to drive down the charge in a multivibrator capacitor at the end of each drive pulse to provide substantially instantaneous recycling.

3,681,621

ADJUSTABLE FREQUENCY BIPOLAR SQUARE WAVE GENERATING CIRCUIT

Robert F. Downs, Santa Ana, Calif., assignor to The Okonite Company, Ramsey, N.J.

Filed Sept. 17, 1969, Ser. No. 858,636
Int. Cl. H03k *1/16*
U.S. Cl. 307—271 9 Claims



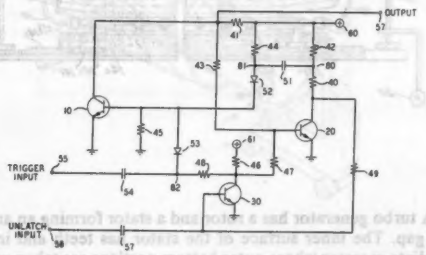
An inverter circuit for providing low-frequency pulses to a load device, such as the ringer winding of a telephone set, the circuit having a high-frequency oscillator, a capacitor charging-circuit energized by the output of the high-frequency oscillator for providing positive-going pulses across the output of the inverter circuit each time the high-frequency oscillator is rendered operative for a predetermined period of time, a pulse circuit for providing the load device with negative-going pulses each time it is operative; and a low-frequency oscillator for alternatively, at a low frequency, rendering the high-frequency oscillator and the pulse circuit operative for predetermined periods of time, whereby said output of the inverter circuit is energized by alternately positive and negative-going pulses.

3,681,622

LATCHING PULSE GENERATOR INCLUDING A MONOSTABLE MULTIVIBRATOR

Stephen Attila Dalyai, Old Bridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 24, 1970, Ser. No. 101,211
Int. Cl. H03k *3/26*
U.S. Cl. 307—273 12 Claims



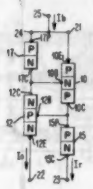
A monostable multivibrator used as a pulse generator is coupled with an auxiliary transistor such that once the multivibrator has been triggered and an output pulse generated, the multivibrator "latches" and further attempts at triggering are ignored until an "unlatching" signal is applied.

3,681,623

GEOMETRIC CURRENT AMPLIFIER

Harry S. Hoffman, Jr., Saugerties, and Jerry Sala, Kingston, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 716,278, March 15, 1968, abandoned. This application Dec. 31, 1970, Ser. No. 103,324
Int. Cl. H03k *1/12*
U.S. Cl. 307—297 10 Claims



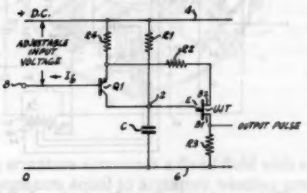
A three terminal circuit comprised of two semiconductor transistors of opposite polarity types and two semiconductor diodes. These semiconductors are interconnected so as to provide positive regenerative feedback in a manner which permits achieving highly stable, temperature insensitive circuit characteristics which can be made independent of circuit parameters. The circuit requires no resistors, capacitors or inductors and may be used with particular advantage in integrated circuit form. Use of the circuit as an impedance converter, current generator, voltage regulator and differential amplifier are illustrated.

3,681,624

UNIJUNCTION TRANSISTOR CIRCUIT WITH IMPROVED RECOVERY

Arthur F. Allison, West Bend; Donald J. Greening, Thiensville, and Anton N. Mollgaard, Pewaukee, all of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Dec. 17, 1970, Ser. No. 98,998
Int. Cl. H03k *19/08*
U.S. Cl. 307—301 10 Claims



A negative resistance circuit such as a pulse-forming or relaxation oscillator circuit employing a unijunction transistor as the negative resistance element and adapted for firing an SCR or the like. The tendency of the negative resistance element to fail to recover to non-conducting condition after it has been triggered into conduction, due to a low valley current characteristic, is overcome by an improved recovery circuit that uses the interbase current to reduce the input current.

3,681,625

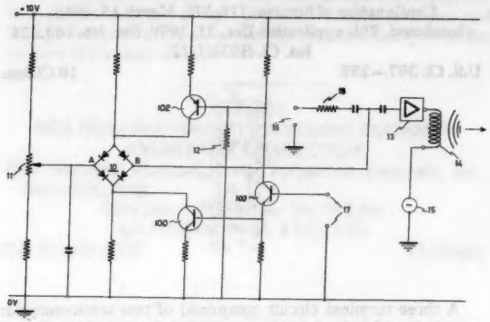
VARIABLE, NONLINEAR IMPEDANCE

Stefan Kudelski, 1052 Le Mont-sur-lausanne, Chemin De La Croix, Switzerland

Filed Dec. 22, 1969, Ser. No. 887,301
Claims priority, application Switzerland, Dec. 26, 1968, 19290/68
Int. Cl. H03k *3/26*
U.S. Cl. 307—321 4 Claims

Use of an electronic circuit constituting a variable, nonlinear impedance having a bridge with four branches, each

comprising a diode, two of the diagonal points of the said bridge being fed by an adjustable current and the other two diagonal points of the bridge constituting the terminals of the



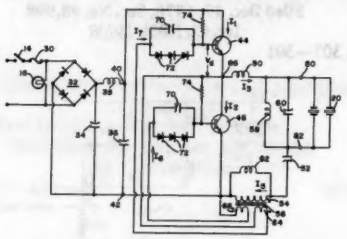
impedance, the direction of conduction of the diodes being the same at the diagonal points fed by the adjustable current in order to compensate for nonlinearity and/or regulate the gain of an electronic device.

3,681,626

OSCILLATORY CIRCUIT FOR ULTRASONIC CLEANING APPARATUS

William L. Puskas, Trumbull, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Filed Nov. 11, 1971, Ser. No. 197,701
Int. Cl. H01v 7/00
U.S. Cl. 310—8.1 **5 Claims**



An oscillatory circuit for ultrasonic cleaning apparatus, omitting an output transformer, includes a half bridge transistor switching circuit and an oscillatory circuit to which a variable quantity of ultrasonic transducers are connectable. The feedback circuit for causing the transistors to be alternatingly conductive comprises a transformer winding and the serially connected parallel connection of a capacitor and unidirectional current conduction means (rectifier) so selected that during the non-conductive period the associated transistor is biased with a potential slightly less than the base-emitter electrode breakdown voltage.

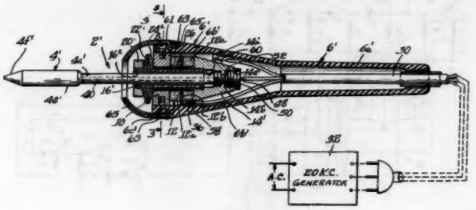
3,681,627

SONICALLY OPERATED TOOL AND SONIC MOTOR THEREFOR

Edward J. Murry, and Charles Mitchell, both of Palos Park, Ill., assignors to Gulton Industries, Inc., Metuchen, N.J.

Filed July 7, 1969, Ser. No. 29,344
Int. Cl. H01v 7/00
U.S. Cl. 310—8.7 **11 Claims**

A sonically operated tool unit preferably forming a half wave sonic vibrator comprising a piezoelectric transducer for producing longitudinal vibrations and sandwiched between a first relatively heavy assembly of parts forming, among other things, a supporting portion for the tool unit and a second relatively light assembly of parts forming a readily vibratory work performing portion of the tool unit and including at the end thereof a work performing element which is to engage and vibrate against a surface external to the unit. The lighter second assembly of parts most advantageously includes a tapered velocity transformer having its wide end immediately



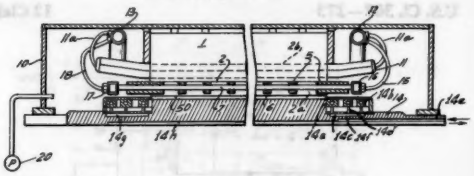
contiguous to the transducer and having a longitudinal bore aligned with openings extending through the transducer and first assembly of parts. The work performing element has a long shank extending freely through the first assembly of parts, the transducer and the front end portion of the velocity transformer. The shank is rigidly secured to the rear end portion of the velocity transformer so the high velocity vibration of the narrow end of the velocity transformer is transmitted to the work performing element through the long shank thereof.

3,681,628

COOLING ARRANGEMENT FOR A DYNAMOELECTRIC MACHINE

Christoslaw Krastchew, 44 W. 63rd St. Apt. 626, New York, N.Y.

Filed Sept. 14, 1970, Ser. No. 71,919
Int. Cl. H02k 9/20
U.S. Cl. 310—54 **31 Claims**



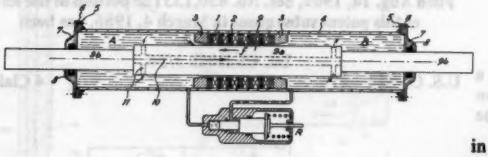
A turbo generator has a rotor and a stator forming an annular gap. The inner surface of the stator has teeth and intermediate recesses whose outer bottom portions are taken up by stator windings. Cooling means are provided in the unused inner recess portions which are free of stator windings. The cooling means comprise rigid holding means secured in the open inner recess portions to the adjacent inner teeth portions, and cooling pipes for a coolant supported by the holding means so that the stator and rotor portions bounding the gap are efficiently cooled which is particularly advantageous when the rotor and stator windings are internally cooled.

3,681,629

ELECTRICAL RECTILINEAR-MOTION DEVICES

Lucien Drye, Colombes, France, assignor to Jeumont-Schneider, Paris, France

Filed April 26, 1971, Ser. No. 137,198
Claims priority, application France, April 28, 1970, 7015408
Int. Cl. H02k 41/02
U.S. Cl. 310—14 5 Claims



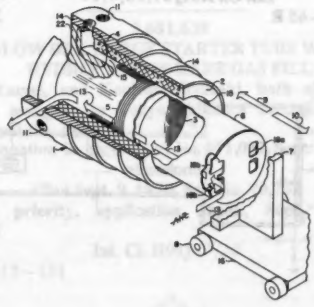
A rectilinear-motion device comprising an armature shaft acted on lengthwise by a moving magnetic field produced by a field device disposed around the armature shaft. A tubular member is rigidly secured to the field device and disposed on the axis thereof beyond at least one of its end faces, and means are associated with the armature shaft and with the tubular member to bound therein two liquid-filled hermetic enclosures through which the shaft extends and which are interconnected by a limited-delivery duct so that the volumes of the enclosures vary in inverse proportion and by the same amount for a movement of the shaft in either direction.

3,681,630

AIR COOLED LINEAR MOTOR

David A. Sutton, Goleta, Calif., assignor to Information Magnetics Corporation, Galeta, Calif.

Filed Aug. 16, 1971, Ser. No. 172,037
Int. Cl. H02k 41/02
U.S. Cl. 310—16 11 Claims



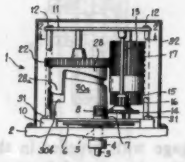
An open end motor of the linear motion type has a tubular air gap between a center core and a tubular magnet or field piece. An armature of tubular shape fits in the air gap and is mounted on a cup-shaped member. The relative movement between the core and the armature cup gives rise to a piston-cylinder structure which is utilized to pump air past the armature windings to cool them. A flexible washer on a closed end motor acts as a pump.

3,681,631

GENERATOR OF ELECTRICAL SIGNAL PULSES

Franz Haener, Mississauga, Ontario, Canada, assignor to Neptune Meters Limited, West Toronto, Ontario, Canada

Filed July 19, 1971, Ser. No. 163,964
Int. Cl. H02k 35/02
U.S. Cl. 310—37 12 Claims



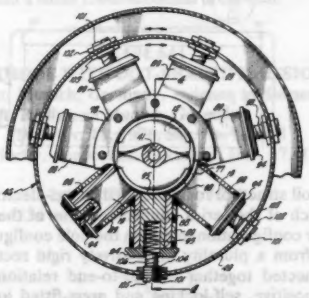
This generator of electrical signal pulses is intended for use in a remote meter reading system in which the generator is driven by a meter, e.g., a water meter, and produces a single pulse upon the completion of a predetermined number of revolutions of the meter rotor.

3,681,632

CONSTANT SPEED DC MOTOR WITH INTERIOR FIELD

Dale E. Sliger, 1810 Citrus Ave., Redlands, Calif.

Filed Jan. 18, 1971, Ser. No. 107,122
Int. Cl. H02k 47/00
U.S. Cl. 310—46 8 Claims



A revolving armature surrounds a fixed field with a commutator having segments equal to armature winding groups. The multiple cores of the revolving armature are movable within the armature coil windings such that centrifugal force displaces the core pieces from the field with a consequent weakening of the armature flux. Biasing springs oppose the outward movement of the core pieces. The spring bias is adjustable so the desired constant speed of the DC motor may be calibrated such that a balance point is achieved between that rotation speed causing the centrifugal force urging the cores away from the armature and the spring bias.

3,681,633

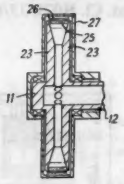
CURRENT TRANSFER IN HOMOPOLAR MACHINES

Ian Roderick McNab, Fossway, England, assignor to International Research & Development Company Limited, Fossway, England

Filed Aug. 19, 1970, Ser. No. 64,997
Claims priority, application England, Aug. 27, 1969, 42,638/69
Int. Cl. H02k 31/00
U.S. Cl. 310—178 7 Claims

Current transfer in a homopolar dynamo-electric machine is effected by liquid metal which is caused to flow from the

periphery of the rotor by centrifugal action and impinges on a stationary trough which provides a current transfer surface and serves to collect the liquid metal, which can then be recirculated to the rotor. The liquid metal can emerge from a



porous pad to engage with brushes in the trough but in a preferred construction is sprayed from annular distribution trough which projects from the periphery of the rotor into the collecting trough.

3,681,634

POLE COIL STRUCTURE FOR DYNAMO-ELECTRIC MACHINE

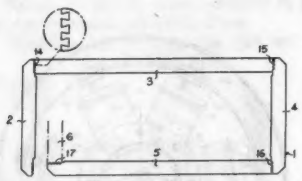
Peter Peter, Wettingen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Feb. 18, 1971, Ser. No. 116,350

Claims priority, application Switzerland, Feb. 25, 1970, 2795/70

Int. Cl. H02k *3/18*

U.S. Cl. 310—218 **4 Claims**



A pole coil structure for use on a dynamo-electric machine wherein each of the series connected turns of the coil has a rectangular configuration to match the pole configuration and is formed from a plurality of relatively rigid rectilinear flat strips connected together in end-to-end relation solely by means of positive, self-locking and press-fitted joints of the dovetail type which function both as an electrical as well as mechanical connections.

3,681,635

CARBON BRUSH FOR USE IN ELECTRIC MOTORS

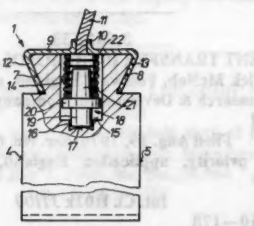
Erich Bayer, Stuttgart-Vaihingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed March 4, 1971, Ser. No. 121,019

Claims priority, application Germany, March 21, 1970, 70105214

Int. Cl. H02k *13/00*

U.S. Cl. 310—248 **13 Claims**



An elongated brush body has a trailing end face and a leading end face which contacts a rotating collector. A recess extends from the trailing towards the leading end face and is provided with a bottom surface which is domed in direction away from the leading end face and towards the trailing end face.

3,681,636

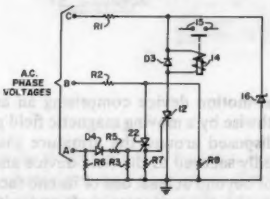
PHASE SEQUENCE SENSING CIRCUIT

Wendell Calfee, Lima, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 14, 1969, Ser. No. 850,133The portion of the term of this patent subsequent to March 4, 1986, has been disclaimed.

Int. Cl. H02h *3/26*

U.S. Cl. 317—47 **4 Claims**



In a polyphase AC power system, application of power to a load only upon correct phase sequence is provided by a circuit including a semiconductor switch such as a thyristor for directly developing a signal for an electrically responsive circuit closure means by the sequence of phase voltages on its control and main electrodes.

3,681,637

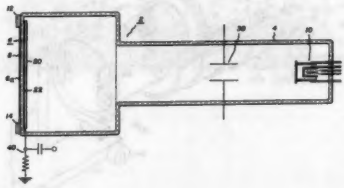
CAMERA TUBE WITH FACEPLATE HEATING MEANS

Kenneth R. Simpson, North Syracuse, N.Y., assignor to General Electric Company

Filed Feb. 10, 1971, Ser. No. 114,259

Int. Cl. H01j *31/28, 7/24*

U.S. Cl. 313—65 R **3 Claims**



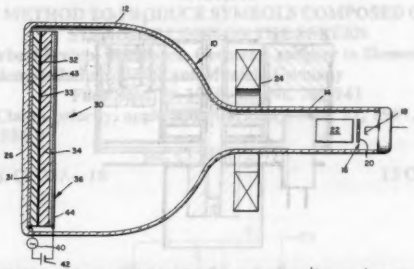
A camera tube is disclosed which is useful for low temperature applications. The faceplate of the camera tube is heated by a transparent conductive coating which provides a current path between two electrodes spaced apart from one another and located at the peripheries of the faceplate. Uniform heating of the faceplate is thereby achieved. The photosensitive coatings on or adjacent the faceplate are thereby heated to provide an operating temperature independent of the low temperature environment.

3,681,638

STORAGE TUBE COMPRISING ELECTRO-LUMINESCENT PHOSPHOR AND CADMIUM SULFIDE FIELD SUSTAINED CONDUCTING TARGET

William P. Bleha, Jr., Santa Monica, and Ronald F. Scholl, Malibu, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed June 18, 1971, Ser. No. 154,283
Int. Cl. H01j 31/58, 31/10, 29/45
U.S. Cl. 313—68 D 3 Claims



This invention provides a high resolution direct view storage tube which, in addition to having superior resolution capabilities, also requires less complex circuitry than standard type direct view storage tubes. More particularly, a meshless storage tube is disclosed which makes use of a meshless multilayered thin film structure as a combined image storage and display medium. The principle components of this structure include a thin film electronic storage medium, an opaque antifeedback layer, and an electroluminescent image display layer. In operation, a bias voltage is maintained across the entire structure, and a high resolution image is initially impressed upon the storage medium by means of a scanning electron beam. The scanning beam creates local conductivity modulations within the storage film which correspond to the input image, and these modulations, in turn, alter local field configurations across the electroluminescent layer, thus creating a visible output image. After initial scanning, the conductivity modulations in the storage layer are maintained for an extended period of time (several tens of seconds) provided that an applied electric field continues to be maintained. This phenomenon is hereinafter referred to as "field sustained conductivity." Removal or reversal of the applied electrical field restores the storage element to its initial insulating condition, and the screen is thereby erased.

3,681,639

GLOW DISCHARGE STARTER TUBE WITH HYDROCARBON-RARE GAS FILL

Taketo Kamei, and Kouichi Miyazaki, both of Yokosuka, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasuki-shi, Japan

Continuation-in-part of Ser. No. 671,082, Sept. 27, 1967, abandoned
Filed Sept. 9, 1970, Ser. No. 70,758
Claims priority, application Japan, Sept. 30, 1966, 41/64328
Int. Cl. H01j 17/20
U.S. Cl. 313—151 7 Claims

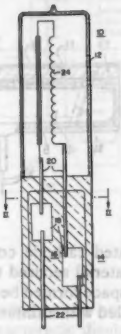
A glow discharge starter tube having within a sealed envelope gaseous atmosphere consisting of a rate gas and a gaseous hydrocarbon.

3,681,640

RIBBON CONDUCTOR PRESS SEAL STRUCTURE

Jack Martin, Paramus, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 4, 1970, Ser. No. 86,845
Int. Cl. H01j 5/50
U.S. Cl. 313—222 3 Claims



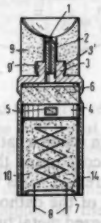
A lead-in conductor assembly for electric lamps is detailed. The lead-in conductor assembly comprises wire-type lead-in connected to opposite ends of ribbon-type lead-ins, with the ribbon-type lead-ins longitudinally spaced from one another in the direction which generally parallels the wire-type lead-in portion. This arrangement allows for more efficient heat dissipation within a small cross-sectional press-seal.

3,681,641

CATHODE WITH DOT-SHAPED EMISSION

Helmut Katz, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 25, 1970, Ser. No. 92,608
Claims priority, application Germany, Dec. 17, 1969, P 19 63 333.1
Int. Cl. H01j 19/06, 1/14
U.S. Cl. 313—336 11 Claims

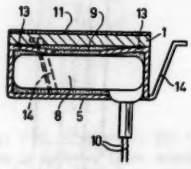


A cathode structure, particularly a MK cathode, employs a wick mounted in a coupling member adjacent a supply of emission substance, preferably barium. The wick may be formed of a number of very thin tungsten wires which are snaked or braided together and covered with a cylindrical coating of, for example, molybdenum. The wick and the emission supply substance are mounted in a housing adjacent a heater element for indirect heating. A matrix of cathodes is provided by fixing coupling members having wicks mounted therein in a spaced apart manner in an insulating plate. In such a matrix heater are disposed and secured in place between adjacent cathodes. The heaters may be jointly operated, but advantageously with different applied voltages.

3,681,642
INDIRECTLY HEATED DISK-LIKE CATHODE

Adrianus Kuiper, Emmaningel, Eindhoven, Netherlands, assignor to U. S. Phillips Corporation, New York, N.Y.

Division of Ser. No. 695,410, Jan. 3, 1968, Pat. No. 3,574,910.
This application May 21, 1970, Ser. No. 48,594
Int. Cl. H01j 1/20
U.S. Cl. 313—337 1 Claim

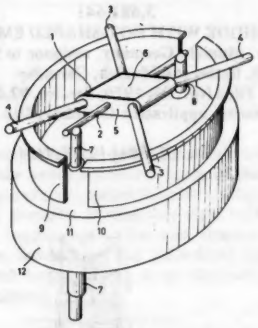


An indirectly heated cathode comprising a support for a layer of emissive material secured to a metal container for a heating element. A space formed between the heating element and the support is filled with a sintered metal powder.

3,681,643
CATHODE-SYSTEM IN WHICH THE CATHODE IS SUPPORTED BY PRESTRESSED WIRES

Johannes Reinier Blatter, Emmasingel, Netherlands, assignor to U. S. Phillips Corporation, New York, N.Y.

Filed Oct. 15, 1970, Ser. No. 81,010
Int. Cl. H01j 1/20
U.S. Cl. 313—337 2 Claims



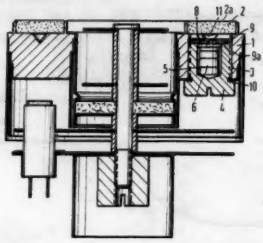
A cathode system in which a cathode comprising a squeezed metal tube having incorporated therein an insulated filament is supported by prestressed wires which extend parallel to the flat emitting surface of the cathode and extend radially outwardly from the squeezed metal tube in the shape of a star.

3,681,644
INDIRECTLY HEATED DISPENSER CATHODE

Horst Hofmann; Erwin Huebner, and Helmut Katz, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 30, 1970, Ser. No. 76,669
Claims priority, application Germany, Oct. 13, 1969, P 19 51 603.1
Int. Cl. H01j 1/14
U.S. Cl. 313—346 DC 5 Claims

A dispenser MK-type cathode structure adapted for storage and/or handling with subsequent activation and a method of producing the same whereby a supply source material of an emission-promoting substance is positioned in an open-ended storage chamber of a plug-like cathode insert member and sealed within the chamber by a fluid impermeable pore-free mask member. A porously sintered tungsten disc member sits above the mask member so as to have an undersurface thereof in fluid communication with the supply source material upon rupture of the mask member. The mask member is sealed to the boundaries of the storage chamber by a self-sticking organic polymer material which is thermally decomposable without residue at operational temperatures of such dispenser cathodes. The mask member comprises a unitary structure

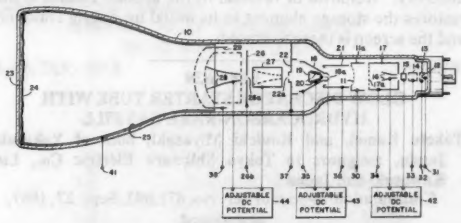


composed of a high melting metal foil having at least one surface thereof coated with the organic polymer material, a lamina of a film forming organic material having a layer of the self-thicking organic polymer material along a surface thereof or a self supporting film of the organic polymer material. The mask member is provided in a controlled thickness of sufficient dimension to resist rupture until the environment around the sealed storage chamber is subjected to cathode vacuum conditions.

3,681,645
CATHODE-RAY CHARACTER-DISPLAY TUBE

Joseph Burns, Pequannock, N.J., assignor to Fairchild Camera and Instrument Corporation

Filed Sept. 15, 1969, Ser. No. 857,938
Int. Cl. H01s 29/46
U.S. Cl. 315—14 9 Claims



A cathode-ray character-display tube comprises a mask in the form of a segment of a sphere and including a plurality of character-shaped apertures, a conventional cathode-ray gun and deflection mans for developing and focusing on the mask an electron beam having a cross-sectional area comparable to the area of an individual character aperture, and selector means for positioning the electron beam on a desired character of the mask. Between the selector means and the mask is a decelerator electrode and, following the mask, is an accelerating anode including a forward tubular portion facing the mask with an end in the form of a segment of a sphere and concentric with the mask surface and having a central aperture. The rear portion of the anode is frusto-conical and within this portion are mounted pairs of vertical and horizontal beam trajectory correction plates. The tube includes electrodes for focusing the electron beam after passage through the mask onto the anode aperture. Following the anode is a plate elec-

trode transverse to the axis of the tube and having an axial aperture. The tube includes a fluorescent display screen, means for accelerating and projecting a character beam emerging from the anode aperture onto the screen, and deflection means, specifically vertical and horizontal positioning plates, following the transverse apertured plate and the anode. Preferably, a spherical reticulated scan-expanding electrode, convex with respect to the screens, follows all of the previous electrodes of the tube.

3,681,646

METHOD TO PRODUCE SYMBOLS COMPOSED OF STRAIGHT LINES ON THE SCREEN

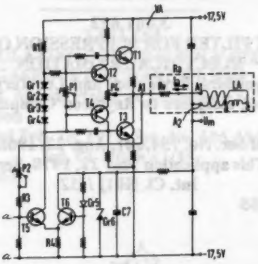
Herbert Brehm, Ebersbach, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 19, 1968, Ser. No. 760,941

Claims priority, application Germany, Sept. 27, 1967, P 15 49 886.9

Int. Cl. H01j *29/76*

U.S. Cl. 315—18 **13 Claims**



A cathode ray system for producing visible symbols comprised of straight lines including means for producing digital information indicative of the symbols to be produced, digital analog-converters for generating voltage values in response to the digital information supplied thereto and means for applying the output voltages from the digital analog-converter to the deflection system of a cathode ray tube. The cathode ray beam is scanned in the horizontal direction and the output voltages from the digital analog-converter are applied to image deflection coils for deflecting the beam in the vertical direction. The voltage applied to the image deflection coils is a step-like voltage of the required pattern to produce the desired symbol on the screen of the tube. During portions of the sweep when writing is not required, dark scanning is employed.

3,681,647

APPARATUS FOR DISPLAYING BASE LINES USED FOR A CHARACTERISTIC DISPLAY

Toshiya Nakagawa, Tokyo-to, Japan, assignor to Iwasaki Tsushinki Kabushiki Kaisha (also known as Iwatsu Electric Co. Ltd.), Tokyo-to, Japan

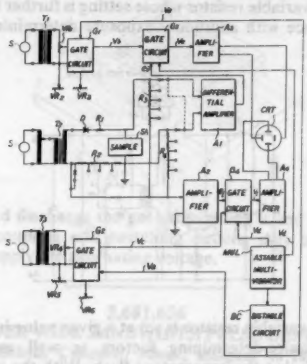
Filed Aug. 8, 1969, Ser. No. 848,529

Claims priority, application Japan, Aug. 14, 1968, 43/57350

Int. Cl. H01j *29/70*

U.S. Cl. 315—18 **3 Claims**

An apparatus for displaying base lines used for a characteristic display device indicating a a pattern on a display screen by displaying relative information of the abscissa and of the ordinate, in which a first gate is provided for selecting alternately at regular intervals the reference level of the information of the abscissa and an ordinate-base-line signal having a gentle slope at least at either the start or the end of the wave form thereof, and a second gate is provided for selecting, in a period in which the first gate selects the reference level of the information of the abscissa, an abscissa-base-line signal having a wave form similar to the ordinate-base-line signal and for selecting, in a period in which the first gate selects the ordinate-base-line signal, the reference level of the information of the ordinate. The outputs of the first gate and the second



gate are respectively applied to the horizontal input and the vertical input of the characteristic display at frequently interrupted intervals of the relative information of the abscissa and of the ordinate.

3,681,648

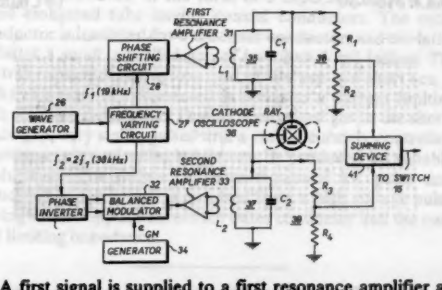
CIRCUIT ARRANGEMENT FOR ADDING TWO SIGNALS IN EXACT MUTUAL PHASE POSITION

Zdenek Mack, Prague, Czechoslovakia, assignor to TESLA, narodni Podnik, Prague, Czechoslovakia

Filed June 12, 1969, Ser. No. 832,689

Int. Cl. H01j *29/70*

U.S. Cl. 315—23 **10 Claims**



A first signal is supplied to a first resonance amplifier and the second harmonic of the first signal is supplied to a second resonance amplifier. The first resonance amplifier is coupled to the vertical deflection plate system of a cathode ray oscilloscope and to an input of a summing device. The second resonance amplifier is coupled to the horizontal deflection plate system of the oscilloscope and to another input of the summing device.

3,681,649

PHOTO FLASH INTENSITY CONTROL WITH VARIABLE RESISTOR IN FLASH TUBE DISCHARGE CIRCUIT

Naoyuki Uno, Oi-Machi, Iruma-gun, and Seijiro Tokutomi, Fujisawa, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Sept. 10, 1970, Ser. No. 71,117

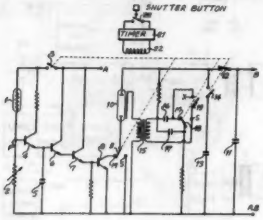
Claims priority, application Japan, Sept. 22, 1969, 44/75483

Int. Cl. H05b *41/40*

U.S. Cl. 315—151 **9 Claims**

A system for controlling the extent to which flash illumination is provided during exposure of film in a camera. A

preparatory flash and a main flash are provided with the system. Light from the preparatory flash is reflected from the object which is to be photographed to a photosensitive unit which responds to this reflected light for influencing the setting of a variable resistor whose setting is further influenced in accordance with additional exposure-determining factors,



so that the variable resistor is set at a given value indicative of these exposure-determining factors as well as the light reflected during the preparatory flash. With the information thus stored at the variable resistor in the form of the given value of the setting thereof, this variable resistor is operatively connected to the main flash for controlling the extent of flash illumination provided thereby during actual film exposure.

3,681,650

METHOD FOR THE RASTERED REPRODUCTION OF HALF-TONE PICTURES

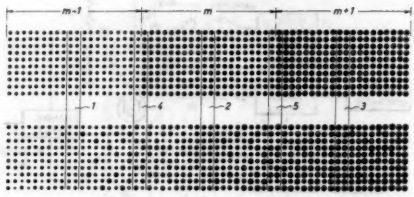
Roman Koll, Kiel-Wellingdorf, Germany, assignor to Dr.-Ing. Rudolf Hell

Filed May 2, 1969, Ser. No. 821,380

Claims priority, application Germany, May 4, 1968, P 17 72 367.0

Int. Cl. H01j *29/52*

U.S. Cl. 315—30 **10 Claims**



A method for the raster reproduction of half-tone pictures wherein a picture is scanned photoelectrically dot-by-dot and voltage values are generated and quantified to represent brightness ranges and wherein an alternating voltage is superimposed on the voltage values before they are quantified to generate a mixing of dot sizes indicative of one brightness range with dot sizes indicative of another adjacent brightness range and to cause the mixing to occur in such a pattern as to make transition between brightness ranges to be more pleasing to the eye.

3,681,651

CHARGED-PARTICLE DEVICE HAVING MAGNETIC FOCUS MEANS

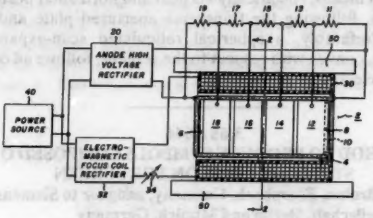
Kurt Schlesinger, Fayetteville, N.Y., assignor to General Electric Company

Filed Feb. 26, 1970, Ser. No. 14,334

Int. Cl. H01j *29/52*

U.S. Cl. 315—31 **11 Claims**

A charged-particle device wherein a magnetostatic field for focus of charged particles is generated by a combination of an electromagnet subject to line voltage variations and a second magnet not subject to line voltage variations, each component contributing an equal amount of flux. Current for the electromagnet component, and anode voltage for the beam, are



derived from the same source of power. Under these conditions, the system becomes "self-regulating," in that size and position of an electron image becomes immune to wide variations of line voltage as well as voltage transients.

3,681,652

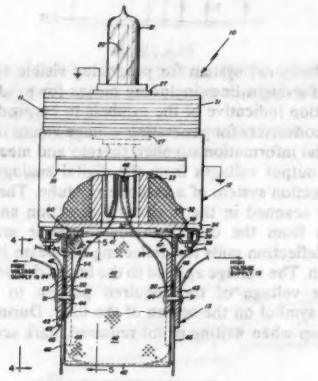
CAPACITIVE FILTER FOR SUPPRESSION OF SPURIOUS ELECTRICAL RADIATION

Carlo P. Domenichini, Lexington, and Leo Terjenian, Natick, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 754,641, Aug. 22, 1968, Pat. No. 3,531,613. This application May 22, 1970, Ser. No. 39,836

Int. Cl. H01j *1/52*

U.S. Cl. 315—85 **2 Claims**



A capacitive filter arrangement coupled to the voltage supply circuit of an electrical energy generator to reduce undesired radiation of energy to acceptable levels in accordance with Federal Communications Commission specifications and requirements for such generators when employed in certain electronic equipment. Elimination of corona discharge at predetermined levels of alternating current and no breakdown of insulation material at predetermined levels of direct current are other characteristics of the structure of the invention.

3,681,653

CONTROLLED HIGH VOLTAGE LIGHTING SYSTEM FOR GASEOUS-DISCHARGE LAMPS

Carl R. Snyder, Alief, Tex., assignor to Esquire Inc.

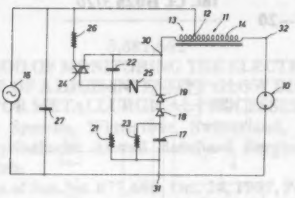
Filed April 8, 1970, Ser. No. 26,615

Int. Cl. H05b *39/04*

U.S. Cl. 315—106 **15 Claims**

A lighting system for gaseous-discharge lamps for applying high voltage pulses to ignite the lamp and for discontinuing the

application of high voltage pulses when the lamp is operating. The system includes ballast facilities having an inductive portion, and a control circuit which is responsive to a voltage induced in the inductive portion when the gaseous-discharge



lamp operates. When the control circuit is operative, the pulsing portion of the system is disabled. The system is arranged so that the components of the control and pulsing circuits are not subjected to the application of high voltage pulses at any time.

3,681,654

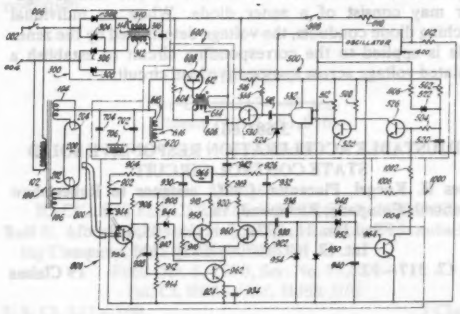
LIGHT-REGULATING POWER SUPPLY CIRCUIT FOR GASEOUS DISCHARGE LAMP

Halsey P. Quinn, Morris Plains, N.J., assignor to Wagner Electric Corporation

Filed Feb. 18, 1971, Ser. No. 116,436

Int. Cl. H05b *41/36*

U.S. Cl. 315—151 **12 Claims**



A power supply circuit operative to supply sinusoidal high-frequency (28 kilohertz) electrical power which meets both the starting and running requirements of a gaseous discharge lamp, and further operative to regulate the light output of the lamp, all without mechanical switching means or saturable reactors.

3,681,655

GLASS-CLAD WIRE GAS DISCHARGE DISPLAY MATRIX

Peter Alan Birrell Toombs, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

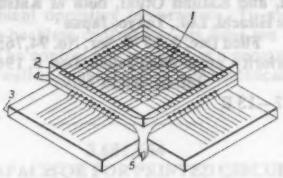
Filed Nov. 5, 1970, Ser. No. 87,197

Claims priority, application Great Britain, Aug. 28, 1969, 42,813/69

Int. Cl. H01j *61/06*; H05b *41/30*

U.S. Cl. 315—169 R **8 Claims**

A gas discharge display matrix includes a plurality of glass-clad conductors woven into a form of matrix cross-over points. The matrix is enclosed within a glass envelope filled with an ionizable gas or a mixture of gases. By applying alternating voltage to selected pairs of the glass-clad wires, the cross-over point defined by the selected pair of wires is made



to ionize and discharge the gas surrounding it and emit light. Capacitor coupling and switching circuits may be used to selectively apply the alternating voltage.

3,681,656

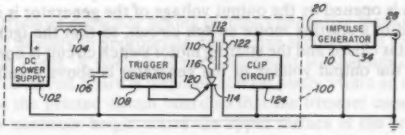
HIGH POWER WIDE BANDWIDTH PULSE GENERATOR

Peter G. Mitchell, Concord, Mass., assignor to Ikor, Incorporated, Burlington, Mass.

Filed Sept. 23, 1970, Ser. No. 72,888

Int. Cl. H03k *3/35, 3/57*

U.S. Cl. 315—223 **9 Claims**



A pulse generator, particularly useful for synthetic generation of microwaves, in the form of a superatmospheric gas-filled elongated tube having coaxial conductors. The outer conductor is insulated from the inner conductor, and the latter includes a small, air-filled gap of less than 4 mil inches. The central conductor facing one end of the gap is a short (ca. 1 inch) charging line connected in series to a current limiting high resistive impedance. Due to pressurized gas in the short-space gap, very stable pulses with a very accurately controlled repetition rate and pulse height can be produced by suitable modulation. The pulses can exceed several kv. pulse amplitude when the device is powered from a high voltage pulse driving source applied across the outer conductor and the current limiting impedance.

3,681,657

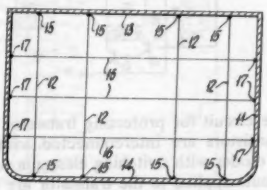
SAFETY APPARATUS FOR MAMMOTH TANKERS

Eric A. Roberts, Larchmont, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed March 3, 1971, Ser. No. 120,578

Int. Cl. H05f *3/02*

U.S. Cl. 317—2 D **1 Claim**

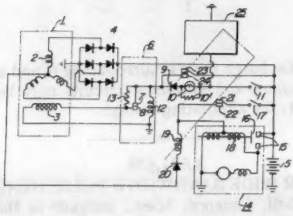


A large tank has electrically conductive wires spaced laterally apart and extending from top to bottom as well as from side to side. They are electrically bonded to the tank for dissipating any static charges.

3,681,658
DEVICE FOR PROTECTING A STARTING MOTOR OF AN INTERNAL COMBUSTION ENGINE

Keigo Naoi, and Katumi Otuki, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 3, 1970, Ser. No. 94,768
Claims priority, application Japan, Dec. 8, 1969, 44/97884
Int. Cl. H02h 7/093
U.S. Cl. 317—13 R 2 Claims

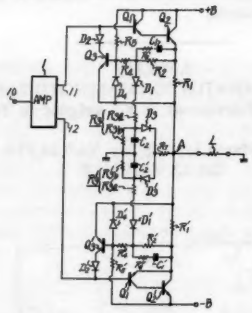


A device for protecting a starting motor for an internal combustion engine prevents misoperation of the starting motor. A normally opened contact which is closed by the output voltage of a generator is connected in an ignition circuit connected at an end thereof with a battery, and a normally closed contact which is opened by the output voltage of the generator is connected in a starting motor switch circuit, so that the ignition circuit is closed and the starting motor switch circuit is opened when the output voltage of the generator is above a definite level.

3,681,659
AMPLIFIER PROTECTIVE CIRCUIT

Tadao Suzuki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 775,386, Nov. 13, 1968. This application March 26, 1971, Ser. No. 128,365
Claims priority, application Japan, March 26, 1970, 45/25362
Int. Cl. H02h 7/20, 3/38
U.S. Cl. 317—16 12 Claims

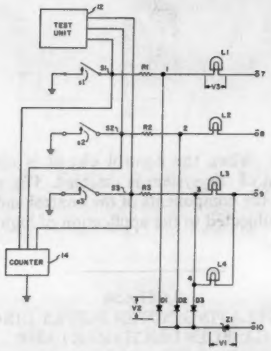


A protective circuit for protecting transistor amplifiers in which the transistors are interconnected with certain impedances and diodes with switching elements such that voltages and currents applied to the transistor are detected and utilized to sense when a condition exists which would injure the transistor. Bridge circuits and diodes are interconnected with the transistor to be protected and in certain embodiments a switching transistor is used with the bridge circuit and diode to protect the transistor.

3,681,660
OVERVOLTAGE PROTECTION NETWORK

Generoso Acevedo, Milan, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 9, 1971, Ser. No. 169,908
Int. Cl. H02h 3/20
U.S. Cl. 317—20 6 Claims

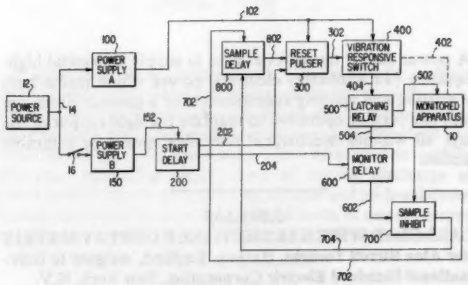


Voltage regulation is provided by a single voltage regulator to a number of individual circuits. Each of the individual circuits is independently controlled by a switch in series with the voltage regulator across a voltage supply. The switches consist of switching diodes which individually become conductive when the applied voltage across the particular circuit undergoes an excursion above a certain level. The voltage regulator may consist of a zener diode. When an individual switching diode conducts, the voltage determined by the zener diode is applied to the corresponding circuit to establish a regulated voltage across a respective load circuit.

3,681,661
ADJUSTABLE ACCELERATION RESPONSIVE SOLID STATE CONTROL CIRCUIT

James H. Koegel, Placentia, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 11, 1971, Ser. No. 105,463
Int. Cl. H02h 5/00; H02p 7/00
U.S. Cl. 317—22 19 Claims



A solid state control circuit for controlling the operative state of a monitored apparatus in response to vibration or acceleration disturbances, including an adjustable start delay network enabling the monitored apparatus to reach normal operating conditions prior to initiating a control sequence, an adjustable sample delay network adapted to sample the acceleration experienced by the monitored apparatus a number

of times prior to removing power from the apparatus, and an adjustable monitor delay network connected to shutdown the monitored apparatus after a preselected number of samples such that the apparatus is safely deenergized only in response to acceleration disturbances which persist over a given period of time.

3,681,662

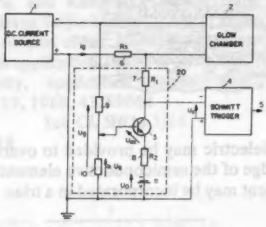
METHOD OF MONITORING THE ELECTRICAL BEHAVIOR OF A HIGH-INTENSITY GLOW DISCHARGE FOR METALLURGICAL PROCESSES

Gelli Anton Spescha, Winterthur, Switzerland, assignor to Elektrophysikalische Anstalt Bernhard Berghaus, Vaduz, Liechtenstein

Division of Ser. No. 677,660, Oct. 24, 1967, Pat. No. 3,579,029. This application Oct. 23, 1970, Ser. No. 83,431

Int. Cl. H02h *3/20*

U.S. Cl. 317—31 **1 Claim**



The method of monitoring a circuit for a low discharge wherein the voltage and current of the discharge are compared by the circuit and a Schmitt trigger generates a control signal if the voltage-current relationship indicates unsafe operation.

ERRATUM

For Class 317—47 see:
Patent No. 3,681,636

3,681,663

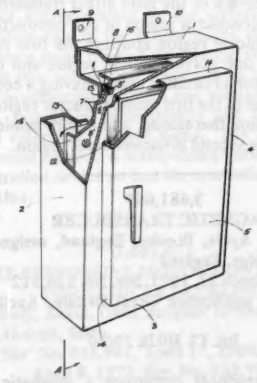
BACKLESS ELECTRICAL CONTROL PANEL BOX

Rolf G. Albers, St. Louis, Mo., assignor to Brasch Manufacturing Company, Inc., St. Louis, Mo.

Filed Oct. 5, 1970, Ser. No. 77,870

Int. Cl. H02b *1/08;* H05k *5/02*

U.S. Cl. 317—100 **2 Claims**



A electrical control panel enclosure or box characterized by the absence of a back. Instead of being used as the conventional sub-panel, the control panel, when attached, becomes the back panel of the control box. In making the attachment, an air space is maintained between the control box sides and the control panel so that air can enter the control box to reduce its ambient operating temperature. To maintain the strength of the backless control box, its sides are of channel construction. The control box is useful as a general electrical control box as well as in conjunction with electrical resistance duct heaters.

3,681,664

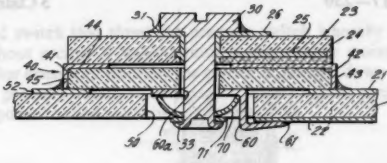
TRIMMER CAPACITOR FOR PRINTED CIRCUIT BOARD

Louis G. Metzger, Closter, N.J., assignor to JFD Electronics Corp., Brooklyn, N.Y.

Filed Aug. 19, 1971, Ser. No. 173,134

Int. Cl. H01g *5/06;* H02b *1/04*

U.S. Cl. 317—101 C **11 Claims**



A trimmer capacitor having painted conductive leads is soldered directly to appropriate conductive sections of a printed circuit panel. A portion of the adjustment mechanism of the printed circuit board is disposed at least partly within an opening in the printed circuit board so that the trimmer capacitor has a minimum height above the upper surface of the printed circuit board. During manufacture, a lug is soldered to the printed circuit, which lug is to be connected to the rotor electrode, and the board is then cleaned of soldering flux. The stator of the capacitor is then soldered to the printed circuit board and the board is again rinsed clean of soldering flux. The rotor assembly is later mounted on the soldered stator assembly, and the rotor electrode is connected to the printed circuit board by a pressure connection to the lug. The sliding interface between the stator and rotor is not subjected to soldering fluxes, so as to not interfere with intimate seating and free sliding of these surfaces relative to one another.

3,681,665

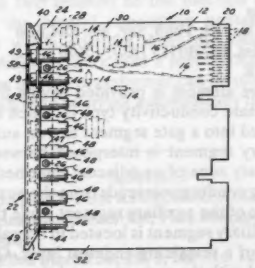
STATUS INDICATING DISPLAY FOR ELECTRONIC CIRCUIT CARDS

Richard G. Olds, Garden City, and Frank X. Zammitt, Birmingham, both of Mich., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 11, 1971, Ser. No. 114,508

Int. Cl. H02b *1/04*

U.S. Cl. 317—101 CC **11 Claims**



A translucent plastic strip having various indicia thereon is positioned along the front edge of an electronic circuit card. A

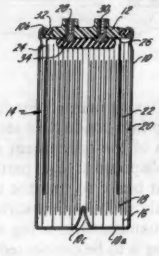
plurality of lamps are electrically connected to selected circuits on the card and are positioned behind the strip to selectively light selected portions of the strip in response to a particular status of the circuits to which they are connected. The indicia on the strip schematically represent various electrical components on a machine which is being controlled by the electronic logic circuitry on the card. The strip is detachably attached to a panel fixedly mounted on the card to permit the strip to be transferred whenever the card is replaced.

3,681,666

ELECTROLYTIC CAPACITOR WITH EXTENDED ELECTRODE FOR SUPPORT IN THE CONTAINER

Edward L. Bowling, Broadway, N.C., assignor to Cornell-Dubilier Electric Corporation, Newark, N.J.

Filed July 6, 1971, Ser. No. 159,873
Int. Cl. H01g 9/06
U.S. Cl. 317—230 **3 Claims**



An electrolytic capacitor of wound electrodes and a metal container has an extended-foil cathode. The cover of the container is forced against the top of the wound electrolytic capacitor section, and this is transmitted as pressure of the wound section against the bottom of the container. The forced contact of the extended-foil cathode against the metal container promotes efficient heat dissipation which allows an increased ripple-current rating for the electrolytic capacitor. The construction has excellent resistance to shock and vibration without resort to a deposit of potting compound between the wound section and the container bottom.

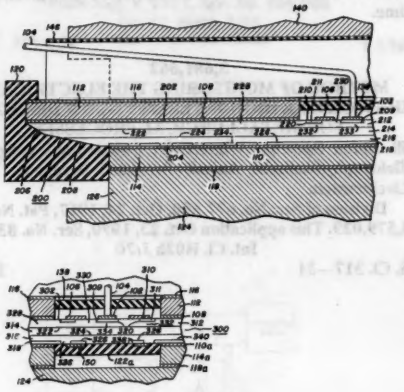
3,681,667

CONTROLLED RECTIFIER AND TRIAC WITH LATERALLY OFF-SET GATE AND AUXILIARY SEGMENTS FOR ACCELERATED TURN ON

Richard A. Kokosa, Skaneateles, N.Y., assignor to General Electric Company

Filed Dec. 12, 1969, Ser. No. 884,660
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 317—235 R **31 Claims**

A semiconductive element is provided having five successive layers of alternate conductivity type in which a first endmost layer is divided into a gate segment and an auxiliary segment. The auxiliary segment is interposed between a main zone and an auxiliary zone of an adjacent intermediate layer. A junction bridging conductor extends from the auxiliary zone to an adjacent edge of the auxiliary segment while the remaining edge of the auxiliary segment is located in lateral proximity to a main portion of a remaining endmost layer. Ohmic contacts are associated with the main zone and the main portion. An auxiliary portion of the remaining endmost layer may be divided from the main portion thereof. A junction bridging connector may extend from the auxiliary portion toward the main portion at a location near the edge of the main zone associated with the auxiliary segment. The auxiliary portion and the auxiliary segment may both be distributed or further sub-



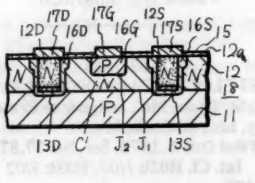
divided. A dielectric may be provided to overlie the connectors or the edge of the semiconductive element. The semiconductive element may be incorporated in a triac.

3,681,668

SEMICONDUCTOR DEVICE AND A METHOD OF MAKING THE SAME

Isamu Kobayashi, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 12, 1968, Ser. No. 774,702
Claims priority, application Japan, Nov. 14, 1967, 42/73155, Dec. 21, 1967, Japan 42/82055
Int. Cl. H01l 11/14
U.S. Cl. 317—235 R **4 Claims**



Semiconductor device of the field effect transistor type including a first semiconductor region of one conductivity type, a second semiconductor region abutting the first region and containing at least one polycrystalline region and one single crystal region, the polycrystalline region having a conductivity type opposite to that of the first semiconductor region thereby forming a PN junction therealong, and a third semiconductor region formed in the second semiconductor region.

3,681,669

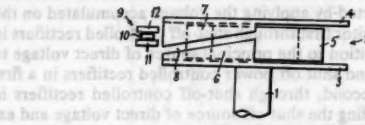
MAGNETIC TRANSDUCER

Peter John Henry Ayers, Beccles, England, assignor to Pye Limited, Cambridge, England

Filed March 22, 1971, Ser. No. 126,512
Claims priority, application Great Britain, April 6, 1970, 16,259/70
Int. Cl. H02k 29/00
U.S. Cl. 318—138 **4 Claims**

A magnetic transducer comprises a magnetic assembly producing a magnetic field varying over a region and a pick-up assembly located in said region and consisting of at least one magnetosensitive semiconductor device having a

unidirectional voltage applied to it. Relative movement between the magnetic assembly and the pick-up assembly



causes variation of the magnetic field influencing the pick-up assembly and enables a correspondingly variable output signal to be derived from said pick-up assembly.

3,681,670

MOTOR CONTROL WITH PULSE COMPARISON MEANS

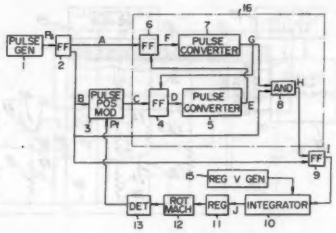
Sadao Kadokura, and Kazuchika Miura, both of Mihara, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 855,449, Aug. 18, 1969, abandoned. This application June 14, 1971, Ser. No. 152,727

Claims priority, application Japan, Feb. 13, 1969, 44/10642; Aug. 19, 1968, 43/59084

Int. Cl. H02p *5/16*

U.S. Cl. 318—318 **2 Claims**



An automatic controller for a device such as a rotary motor has a pulse generation mechanism for generating two reference pulse trains which are antiphase with each other. A detecting device detects a controlled variable of the controlled device and generates a detected pulse train having a pulse repetition rate corresponding to the controlled variable. The detected pulse train and one of the reference pulse trains are fed to a pulse position modulator which synchronizes the detected pulse trains with one of the reference pulse trains. The synchronized pulse train and the other of the reference pulse trains are fed to a comparison circuit for generating pulse signals corresponding to the difference between the pulse repetition rate of the synchronized pulse train and the other reference pulse train. A converting circuit converts the pulse signals into rectangular wave signals having a rectangular wave of predetermined width and voltage, and an integrating circuit integrates differentially the rectangular wave signals and reference voltage signal. The output of the integrating circuit controls a manipulated variable of a regulator for the controlled device so that the controlled variable attains a desired value.

3,681,671

PRESSURE RESPONSIVE MOTOR CONTROL CIRCUIT FOR VEHICLE LEVELING

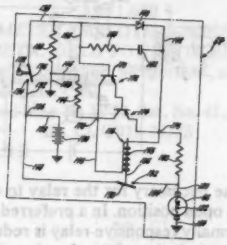
James O. Elliott, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 816,901, April 17, 1969. This application April 9, 1971, Ser. No. 132,713

Int. Cl. H02p *1/04*

U.S. Cl. 318—481 **4 Claims**

In preferred form, an automatic vehicle leveling system including a fluid spring component, an electric motor driven compressor and a storage tank. A height controller controls pressure in the fluid spring means in accordance with vehicle load. A diaphragm operated electrical switch is responsive to system pressure to complete a start circuit for the drive motor. It is associated with a solid-state control module and relay



hold switch that shunt the pressure switch whereby it opens without arcing. A timer circuit in the module maintains the motor energized whereby the system is pumped down to cause the pressure switch to be pressure biased against operation in response to road movements of the vehicle.

3,681,672

CAPACITOR OVERCHARGE PROTECTION CIRCUIT

Karl-Peter Strauss, Braunschweig, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed July 1, 1971, Ser. No. 158,957

Int. Cl. H03k *1/02*; G05f *1/46*

U.S. Cl. 320—1 **9 Claims**

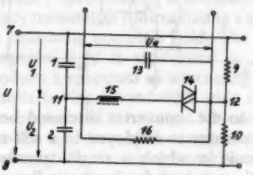


Photo flash apparatus having two storage capacitors connected in series. Normally both capacitors are charged by a voltage doubling circuit connected to an alternating current supply, to a predetermined direct current voltage across both capacitors in series. To prevent overcharging and possible breakdwon of one capacitor in case the charge on the other capacitor decreases as a result of leakage current, the invention provides a safety circuit having two resistors in series with each other and in parallel with the respective capacitors, the safety circuit having a central connection from the junction between the two resistors to the junction between the two capacitors, the central connection containing an impulse transformer which operates when the charges on the two capacitors differ by more than a predetermined amount. The output of the impulse transformer can be used to give an indication of fault or to interrupt automatically the charging of the capacitors.

3,681,673

CHARGER FOR RECHARGEABLE CELL

Irwin B. Weinstock, Gainesville, Fla., assignor to General Electric Company

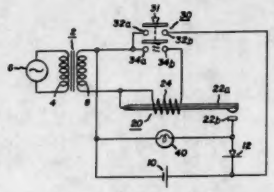
Filed March 30, 1971, Ser. No. 129,509

Int. Cl. H02j *7/00*

U.S. Cl. 320—9 **7 Claims**

A charger for a rechargeable cell is provided having means for first discharging the cell and then charging the cell for a

predetermined time period. A thermally responsive relay is simultaneously heated during the discharge period until contacts on the relay close to complete a charging circuit to the cell. The time period of the charge is determined by the



amount of time necessary for the relay to cool and move the contacts to an open position. In a preferred embodiment heating of the thermally responsive relay is reduced or terminated simultaneous with closing of the charging circuit.

3,681,674

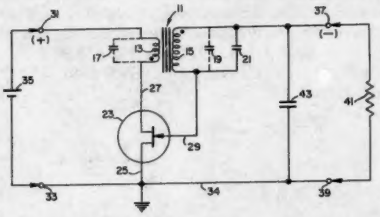
D.C. TO D.C. CONVERTER

Reese S. Terry, Jr., Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Dec. 9, 1971, Ser. No. 206,459

Int. Cl. H02m *3/22*

U.S. Cl. 321—2 **8 Claims**



In the d.c. to d.c. converter disclosed herein, a junction field-effect transistor is employed in a self-starting resonant oscillator circuit in which a single transformer secondary winding functions as both feedback winding and output winding. The gate-source junction of the transistor provides rectification in the output circuit.

3,681,675

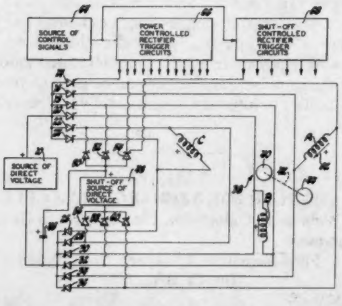
SHUT-OFF ARRANGEMENT FOR THE POWER CONTROLLED RECTIFIERS OF A DC TO AC INVERTER

Mark E. Preiser, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 26, 1971, Ser. No. 175,135

Int. Cl. H02m *7/48*

U.S. Cl. 321—5 **2 Claims**



A controlled rectifier inverter interconnects a principal source of direct voltage with an AC induction motor to develop AC excitation for the motor. Auxiliary commutation of the inverter power controlled rectifiers is provided by a shut-off source of direct voltage, a shut-off capacitor, and a plurality of shut-off controlled rectifiers. Alternate commutations are effected by applying the voltage accumulated on the shut-off capacitor first through shut-off controlled rectifiers in voltage opposition to the principal source of direct voltage to reverse bias and shut off power controlled rectifiers in a first group, and second, through shut-off controlled rectifiers in circuits including the shut-off source of direct voltage and excluding the principal source of direct voltage to shut off power controlled rectifiers in a second group. Successive commutations alternate between power controlled rectifiers of the first and second groups.

3,681,676

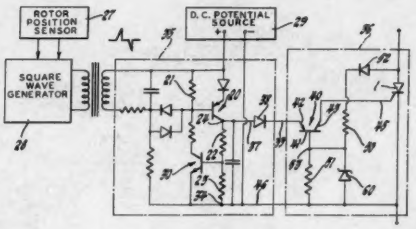
CYCLOCONVERTER SILICON CONTROLLED RECTIFIER GATE SIGNAL INHIBIT CIRCUIT

Frank J. Bourbeau, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed April 21, 1971, Ser. No. 135,842

Int. Cl. H02m *1/18, 5/30*

U.S. Cl. 321—11 **4 Claims**



In a cycloconverter system, a gate signal inhibit circuit for maintaining the gate signal circuit of a corresponding cycloconverter silicon controlled rectifier interrupted when the forward anode-cathode potential thereacross is of a magnitude greater than a predetermined maximum. The collector-emitter electrodes of a switching transistor, responsive to a gate signal for collector-emitter conduction, are connected in series in the gate signal circuit of the corresponding cycloconverter silicon controlled rectifier. A sensing potential, of a magnitude proportional to the magnitude of the forward anode-cathode potential across the corresponding cycloconverter silicon controlled rectifier, is applied across the base-emitter electrodes of the switching transistor in an inverse polarity relationship to maintain the switching transistor non-conductive when the forward anode-cathode potential across the corresponding cycloconverter silicon controlled rectifier is of a magnitude greater than a predetermined maximum.

3,681,677

ARRANGEMENT FOR STARTING OF THYRISTORS, INCLUDING THE ADJUSTMENT OF THE LEADING EDGE OF THE CONTROL PULSE ON THE PRIMARY END OF AN IMPULSE TREATMENT

Jiri Badal, Praha, Czechoslovakia, assignor to CKD Prague, Oborovy podnik, Prague, Czechoslovakia

Filed July 7, 1971, Ser. No. 160,312

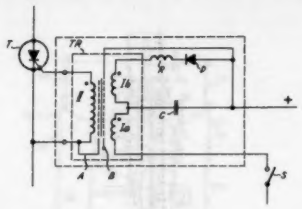
Claims priority, application Czechoslovakia, July 8, 1970, 4775

Int. Cl. H02m *1/18*; H03k *17/00*

U.S. Cl. 321—11 **5 Claims**

An arrangement for starting of thyristors providing a steep leading edge of the control pulse having an impulse transformer transforming the first part of the actuating pulse by a

part of the primary winding of the transformer at a higher ratio of transformation, than the second part of the control pulse



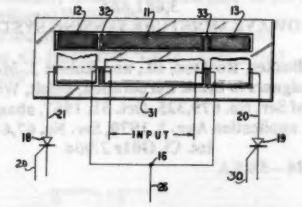
which is transformed by the whole primary winding, using a capacitor and a diode for controlling this process.

3,681,678

CONTROLLED POWER SUPPLY WITH TWO THYRISTORS

John C. Holmquest, Broadview, Ill., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed Feb. 1, 1971, Ser. No. 111,300
Int. Cl. H02m 7/20
U.S. Cl. 321—18 4 Claims



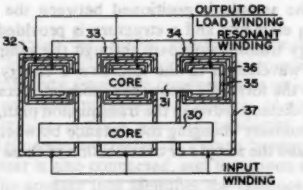
A regulated d.c. power supply using two thyristors and a high leakage reactance transformer.

3,681,679

CONSTANT VOLTAGE TRANSFORMER THREE-PHASE FERRO RESONANT

Kheemoy Chung, Apartment 38, Kingswood Apartments, 1101 Lee Road, Orlando, Fla.

Filed May 7, 1971, Ser. No. 141,191
Int. Cl. G05f 3/06; G05f 7/00
U.S. Cl. 323—6 5 Claims



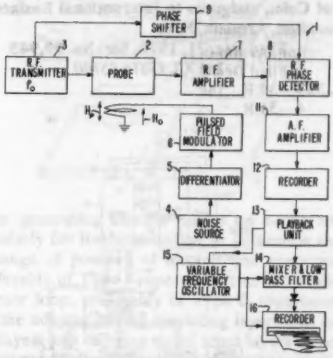
A constant voltage transformer apparatus having two magnetic cores with an input winding linking both cores and an output winding linked to only one of the cores. A resonant circuit is liked to the core having the output winding which core has a flux therein which is the sum of the flux from the input winding and the flux generated by the resonant circuit winding so that this core may be saturated for a constant output in the output winding while the second core is unsaturated and acts to absorb a rise of the input voltage. The symmetry arrangement of the cores and coils makes it especially useful for a multiphase constant voltage transformer. The transformer has an inherent current limiting characteristic and removal of the resonant circuit renders the transformer to be used as a conventional transformer with the added advantage of current limiting.

3,681,680

RF SPECTROMETER EMPLOYING MODULATION OF A DC MAGNETIC FIELD TO EXCITE RESONANCE

Richard R. Ernst, Winterthur, Switzerland, assignor to Varian Associates, Palo Alto, Calif.

Filed May 28, 1970, Ser. No. 41,409
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 R 6 Claims



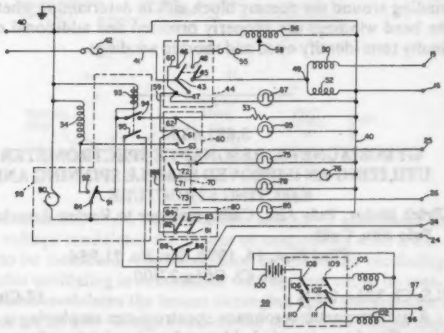
A radiofrequency spectrometer is disclosed which includes a radiofrequency transmitter for irradiating a sample of matter disposed in a polarizing magnetic field. The intensity of the polarizing magnetic field is modulated in a time varying manner to produce a spectrum of alternating magnetic fields within the sample having a bandwidth wide enough to cover the resonance spectrum of the sample for exciting simultaneous resonance of a spectrum of the sample. A detector picks up the resonance signals emanating from the sample for analysis by a spectrum analyzer to separate the resonance lines of the sample.

3,681,681

ELECTRO ANALYZER WITH RECYCLE CIRCUIT FOR SIMULATED TESTING OF FURNACE CONTROL UNITS

Lee Auslander, 8100 Cobden Road, Philadelphia, Pa.

Filed Nov. 23, 1970, Ser. No. 92,064
Int. Cl. G01r 31/02
U.S. Cl. 324—28 R 6 Claims



In test apparatus for testing control units used to control the operation of furnaces and the like, circuitry providing a varia-

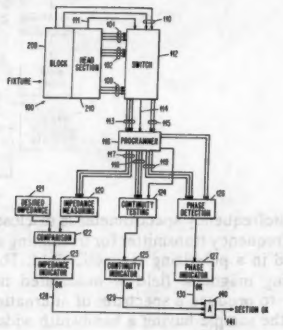
ble voltage for checking control relay pull-in voltage, circuitry for testing impedance values of components of the furnace system, a plurality of indicator means driven by the control unit to indicate operability of a corresponding plurality of control unit circuits, temperature simulation means for simulating temperature conditions of said control unit when placed in a furnace system, a thermostat simulation circuit to simulate a thermostat system in connection with the control unit, and a recycler circuit to repetitively recycle the control unit through cycles of simulated on-off operation.

3,681,682

METHOD AND APPARATUS FOR TESTING GAP SURFACE FINISH AND WINDING CHARACTERISTICS OF A MAGNETIC HEAD SUBASSEMBLY

Conrad M. Cox, Boulder, and Robert B. Fischer, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1970, Ser. No. 99,943
Int. Cl. G01r 35/00
U.S. Cl. 324—34 R **13 Claims**



Surface flatness, magnetic characteristics, electrical connections, etc. of one section of a multi-track magnetic recording head are tested during manufacture and before final assembly. A multi-track head section is mounted in a rotating fixture with the section's gap faces abutting a dummy block which closes the magnetic circuit. As the fixture is rotated, each track's winding is connected, in turn, to a vector impedance meter. The meter reading is compared with a predetermined value to indicate whether the head track winding, material, gap surface, etc. are within acceptable limits. A winding around the dummy block aids in determining whether the head windings are properly oriented and additional continuity tests identify open and shorted windings.

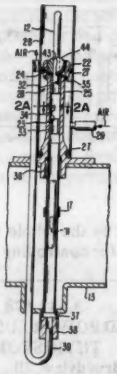
3,681,683

GYROMAGNETIC RESONANCE SPECTROMETER UTILIZING AN IMPROVED SAMPLE SPINNING AND EJECTING STRUCTURE

Ulrich Huber, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Sept. 14, 1970, Ser. No. 71,954
Int. Cl. G01n 27/00
U.S. Cl. 324—0.5 R **17 Claims**

A gyromagnetic resonance spectrometer employing a turbine affixed to a sample holder and responsive to a flow of air for spinning the sample under investigation in the magnetic field, the turbine floating on a column of air within a fixed stator or housing structure, is described. Air bearings are provided for the rotating sample holder within the stator or housing. Means is provided for blocking the egress of the air from the air bearings to eject the sample holder from the magnetic field.

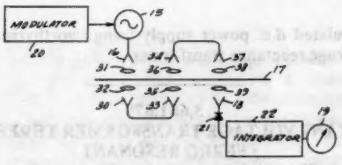


3,681,684

MICROWAVE MOISTURE SENSING SYSTEM AND METHOD

Leroy H. Busker, Rockton, Ill., and Robert J. Mosher, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Division of Ser. No. 679,325, Oct. 31, 1967, abandoned. This application Aug. 3, 1970, Ser. No. 67,641
Int. Cl. G01r 27/04
U.S. Cl. 324—58.5 A **3 Claims**



An apparatus for measuring the amount of moisture in a sample which is generally formed of a microwave energy source, a microwave radiating element connected to the source, a microwave energy receiving element, and a microwave energy indication connected to the receiving element. The sample is positioned between the radiating and receiving elements and a structure is provided for changing the energy transmission path through the sample by at least one-half wavelength of the microwave energy. Such means may take the form of a frequency modulator connected to the source, a dielectric disc in the transmission path, or a structure for continuously changing the distance between the radiating element and the sample or combination of these means.

3,681,685

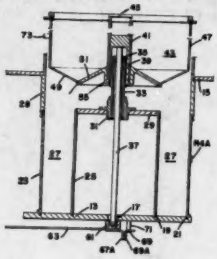
CAPACITIVE MOISTURE MEASUREMENT

Robert James Tarry, Winnipeg, Manitoba; Johannes C. Krielaars, St. Boniface, Manitoba, and Ronald D. Lord, Transcona, Manitoba, all of Canada, assignors to Cae Industries Ltd.

Filed Jan. 22, 1970, Ser. No. 5,014
Int. Cl. G01r 27/26
U.S. Cl. 324—61 **9 Claims**

This application discloses apparatus for the measurement of moisture in grain and other materials. It weighs the sample as

added, to ensure a constant sample weight; it dumps the sample in a predictable manner into a capacitive cell; it effects a



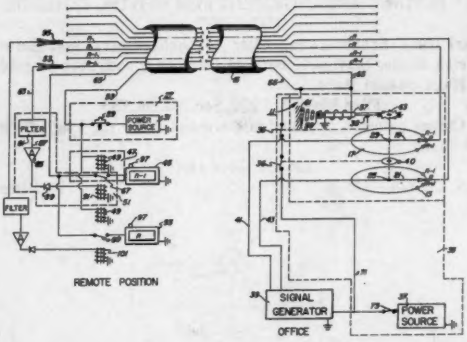
capacitive measurement and compensates for the temperature of the specimen. The measurement of capacitance provides a measure of the moisture content.

3,681,686

CONDUCTOR IDENTIFICATION VIA COUNTING MEANS AT A REMOTE POSITION

Douglas R. Connally, Austin, Tex., assignor to A.P.C. Industries, Inc., Mineral Wells, Tex.

Filed July 27, 1970, Ser. No. 58,407
Int. Cl. H04b *3/46*; G01r *19/00, 31/02*
U.S. Cl. 324—66 **9 Claims**



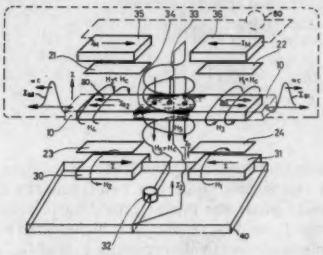
Improved method for cable conductor identification characterized by automatically stepping a source of an identifiable signal onto respective conductors at an identified end thereof, and synchronously stepping a co-connected counter at a remote position where a conductor is to be identified until the tone is detected on a given conductor with which the counter is also connected, and thereupon stopping the counter. The counter thus identifies the conductor being monitored. Also disclosed are specific embodiments in which a plurality of conductors are identified by a plurality of counters at the remote position, as well as the structure of apparatus enabling carrying out the invention. The invention alleviates problems with propagation delay, since no feedback is required; and it allows high rates, or frequencies, of stepping while still obtaining positive identification of the conductors, since the identifiable signal and a counting signal are impressed onto conductors at the identified end concurrently within a given sub-cycle as nearly simultaneously as required by the frequency of the stepping.

3,681,687

SUPERCONDUCTOR DEVICE FOR USE IN MOVING BODIES FOR NAVIGATION PURPOSES TO DETERMINE THE CHANGE IN ORIENTATION THEREOF USING THE SAGNAC EFFECT

Klaus Dieter Erben; Walter Kroy, both of Munich, and Walter E. Mehnert, Ottobrunn, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munchen, Germany

Filed Feb. 9, 1970, Ser. No. 9,485
Claims priority, application Germany, Feb. 17, 1969, P 19 07 857.6
Int. Cl. G01h *27/00*
U.S. Cl. 324—71 R **5 Claims**



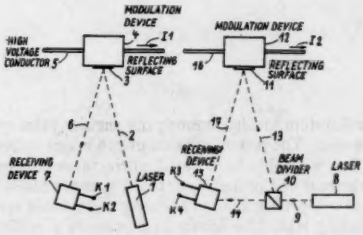
Device for generating electric pulses on superconductor loops particularly for instrumentation to determine the position and change of position of aircraft and spacecraft. An adapter preferably of Type I superconductor is installed in a superconductor loop, preferably of Type II superconductor, the ends of the adapter having insulating layers and carrying signal input layers and carrying signal input layers on one side thereof and current collecting layers on the other side thereof. A signal transmitter controls both the signal input layers and the current collecting layers and an auxiliary coil is provided for producing normal conductivity within an intermediate range.

3,681,688

MEASURING DEVICE FOR CURRENTS IN HIGH VOLTAGE CONDUCTORS

Wolfgang Hermstein; Klaus Mollenbeck, and Gerhard Gericke, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Germany

Filed July 23, 1970, Ser. No. 57,712
Claims priority, application Germany, July 13, 1969, P 19 39 514.3
Int. Cl. G01r *31/00*
U.S. Cl. 324—96 **16 Claims**

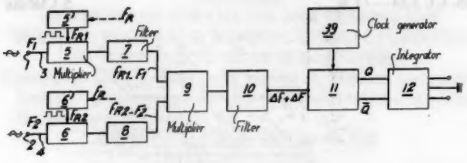


A transmitter emits beams at low voltage. A modulator at high voltage modulates the beams in accordance with a current to be measured. The modulator comprises an oscillating reflector oscillating in accordance with the current to be measured and modulates the beams impinging upon the reflector. A receiver at low voltage receives the modulated beams and converts them into a magnitude corresponding to the current to be measured. The reflector of the modulator reflects the modulated beams to the receiver.

3,681,689
DIFFERENTIAL FREQUENCY METER

Daniel Correard, Clelles; Emmanuel Friess, Meylan; Antoine Salvi, and Roger Tregoures, both of Rueil Malmaison, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Oct. 14, 1969, Ser. No. 866,248
Claims priority, application France, Sept. 22, 1969, 6932157
Int. Cl. G01n 23/02, 23/14
U.S. Cl. 324—79 R 6 Claims

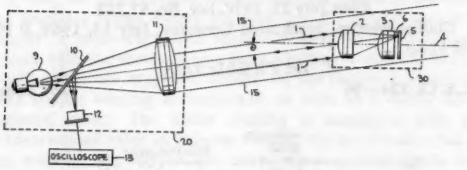


Apparatus for measuring the frequency difference (F_1 - F_2) between two signals comprises two frequency change ways, each having generator means providing reference signals at frequencies f_{R1} and f_{R2} respectively higher than F_1 and F_2, first mixing means respectively receiving F_1 and f_{R1}, or F_2 and f_{R2} signals, and low pass filter means fed by said first mixing means and selecting the frequency (f_{R1} - F_1) or (f_{R2} - F_2). The apparatus also has a common frequency change way receiving the said signals at frequencies (f_{R1} - F_1) and (f_{R2} - F_2) and having second mixing means of frequency (F_{R1} - F_1) and (f_{R2} - F_2) signals, low-pass filter means fed by second mixing means and selecting the frequency (f_{R1} - F_1) - (f_{R2} - F_2) and means for measuring the (f_{R1} - F_1) - (f_{R2} - F_2) frequency.

3,681,690
OPTICAL ANGULAR ACCELEROMETER

Donald J. Mary, Hyattsville, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed Nov. 10, 1970, Ser. No. 88,353
Int. Cl. G01p 3/48
U.S. Cl. 324—162 10 Claims

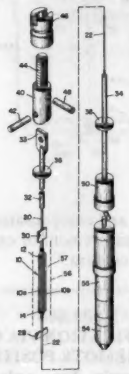


An optical system for determining the angular velocity of a rotating member. The system consists of two major optical assemblies. One assembly in a catadioptric retroreflector attached to the rear end of the projectile. The other assembly is a sensor box comprising a lamp, photodetector, beam splitter, and collimating lens. The sensor box projects a collimated beam of light onto the retroreflector. Light returned by the retroreflector reenters the sensor box and is directed to the photodetector. The retroreflector contains a mirror with alternate reflecting and nonreflecting sectors. As the retroreflector rotates with the spinning member, the light returned to the sensor box is amplitude modulated. The photodetector responds to the modulation of the returning light and generates a corresponding electrical signal whose frequency is in direct proportion to the rotational rate of the spinning member.

3,681,691
HIGH FREQUENCY GALVANOMETER

Alfred C. Mercier, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 11, 1970, Ser. No. 71,576
Int. Cl. G01r 1/00, 31/00
U.S. Cl. 324—154 R 8 Claims

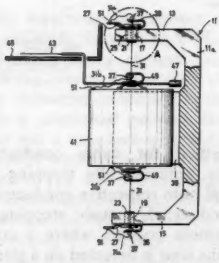


There is disclosed a high frequency galvanometer with minimal interia about the vibratory axis resulting from a circular suspension bobbinless and distributed coil construction.

3,681,692
SUSPENDING ARRANGEMENT FOR MOVING COILS OR THE LIKE

Carl Haas, Erhard-Junghansstr., 47 Schramberg, and Heinrich Stabe, Stuttgart, both of Germany, assignors to said Haas, by said Stabe

Filed May 12, 1970, Ser. No. 36,583
Claims priority, application Germany, May 13, 1969, P 19 24 307.3
Int. Cl. G01r 1/00
U.S. Cl. 324—154 R 9 Claims

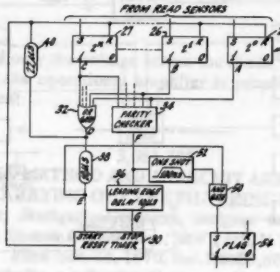


A suspending arrangement for moving coils of electrical instruments of the type wherein the coil is suspended between two coaxial tensioned torsion wires which tend to maintain the coil in a zero position. Each torsion wire is provided with two spaced clamping members which engage springy retainers provided on a support on the one hand and on the coil on the other hand. Each clamping member includes two sections whose inner faces engage the wire and whose external surfaces meet the inner faces along sharply defined edges abutting against the respective retainers. The clamping members are disks, spheres or rollers and can be centered in sockets or recesses of the respective retainers.

3,681,693
MEASUREMENT OF MAXIMUM DYNAMIC SKEW IN PARALLEL CHANNELS

Chia Ying Hsueh, Westboro, Mass., assignor to RCA Corporation

Filed Nov. 27, 1970, Ser. No. 92,969
Int. Cl. G01r 25/00; G04f 9/00; H03d 13/00
U.S. Cl. 324—188 5 Claims

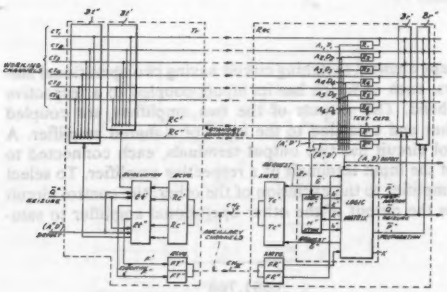


Circuit for determining the times the first and last signals representing bits of character are read from a tape or other recording medium. Signals representing the bits are applied to the inputs of both an OR gate and a parity checker. The parity checker produces an output signal whenever the signals at its input comprise, for example, an odd number. Because of skew, the parity checker may produce several pulses of short duration before it stabilizes. The parity checker is coupled to a circuit that produces an output signal only in response to an input signal having greater than a given duration. The skew is measured by comparing the output signal of the circuit with the output signal of the OR gate delayed for a time period equal to the given duration.

3,681,694
RADIO TELECOMMUNICATION SYSTEM WITH AUTOMATIC REPLACEMENT OF DEFECTIVE CHANNELS

Luigi Sarati, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed May 14, 1969, Ser. No. 824,450
Claims priority, application Italy, May 15, 1968, 16493 A/68
Int. Cl. H04b 3/00
U.S. Cl. 325—2 16 Claims

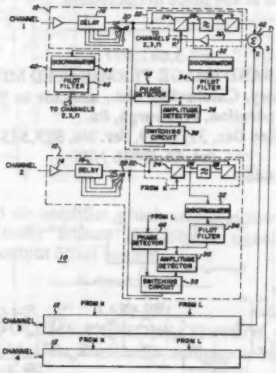


A telecommunication system with several parallel radio channels, operating on different frequency bands, is associated with two standby channels which can be selectively allocated to any working channel by a logic matrix responsive to partial or complete fading of signal in such working channel. Associated discriminating networks establish priorities for the selection of one standby channel over another and for having wholly defective working channels take precedence over channels with only moderately impaired transmission. A single working channel of the group may be selectively marked by a pre-emptive signal enabling this channel to take over, in the event of transmission failure, a standby channel already allocated to a nonprivileged working channel.

3,681,695
MULTIPATH COMPENSATION SYSTEM

Richard G. Cease, Westwood, and William J. Bickford, Weston, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sept. 2, 1969, Ser. No. 854,594
Int. Cl. H04b 1/18
U.S. Cl. 325—305 7 Claims



A system for compensating for multipath distortion in a synthetic phase isolator predetection combiner. Since echos in the signal can be detected with respect to both magnitude and sense, this information can be used to suppress echos or to control time delay compensation elements to thereby provide a more coherent output signal. Multipath distorted signals are received at a plurality of channels, each of which channels effectively shifts the input signal phase by predetection combination with the sum of the signal outputs of the other channels such that each channel output is substantially independent of the input signal phase.

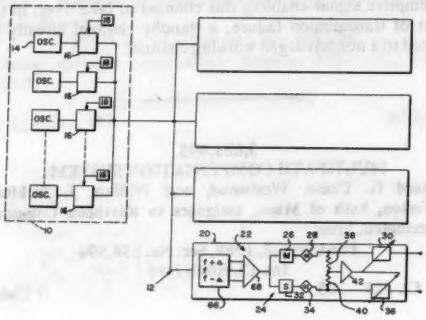
3,681,696
TELEMETERING APPARATUS

Philip L. Epstein, West Caldwell, N.J., assignor to Quindar Electronics, Inc., Springfield, N.J.

Continuation of Ser. No. 867,953, Oct. 20, 1969, abandoned, which is a continuation of Ser. No. 540,549, April 6, 1966, abandoned. This application Sept. 25, 1970, Ser. No. 75,774
Int. Cl. H04l 27/14
U.S. Cl. 325—320 3 Claims

In a telemetering system, a receiver is provided with mark and space channels which are interrelated electronically by applying to the so-called threshold of each channel a control

signal that represents an average of the intensities of the mark and space input signals. An advantage of the foregoing circuitry is noise immunity, which results from raising or lowering the thresholds of both frequency channels in response to noise generated at any place in the system.



3,681,697

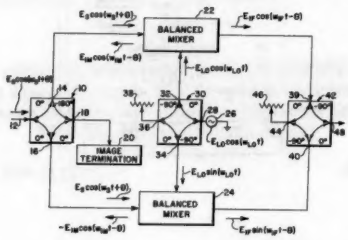
WIDEBAND IMAGE TERMINATED MIXER

John E. Moroney, Catonsville, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1969, Ser. No. 889,515

Int. Cl. H04b 1/26

U.S. Cl. 325—446 **3 Claims**



Described is a wideband image terminated mixer of the type in which an input signal is split into two parts which are fed to separate mixers supplied with local oscillations from a single oscillator. After mixing, the resultant intermediate frequency signals at the outputs of the mixers are combined. The invention is characterized in that the image frequency signals returning from the mixers in the signal paths are summed at an image termination having a reactance such that the incident image frequency signals reflect back to the mixer where mixing with the local oscillator frequency converts at least portion of the image energy to the intermediate frequency. This reduces insertion losses and allows the image to be terminated over at least a 10 percent radio frequency bandwidth using a standard intermediate frequency such as 30 megahertz.

3,681,698

FAST-AVERAGING NOISE-SUMMING SIGNAL DETECTOR

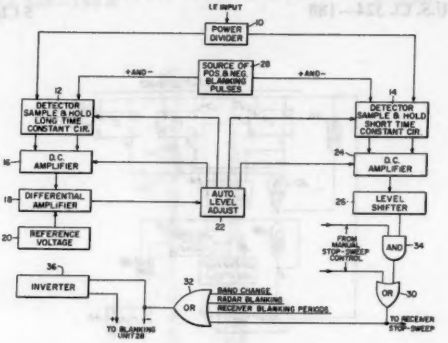
William J. McEvoy, 5081 Aurora Drive, Ventura, Calif.

Filed May 25, 1970, Ser. No. 40,029

Int. Cl. H04b 1/16

U.S. Cl. 325—476 **8 Claims**

An electrical circuit especially adapted for use in an AFS (automatic-frequency-scanning) receiver to provide reliable signal lock-on capability in the presence of varying noise levels. Two networks average the receiver power simultaneously. One of these networks has a long time constant (approximately 15 μ sec) and the other a short time constant (approximately 1 μ sec). The latter is constantly "corrected" by the long time constant network, thereby nullifying variations in the receiver output noise level and allowing the short time constant network to detect radar pulses of less than 0.5 μ sec duration.



3,681,699

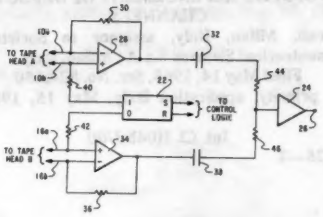
TAPE CHANNEL SWITCHING CIRCUIT

William J. Kelly, Sauquoit, and Warren A. Reynolds, Ilion, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,110

Int. Cl. G06g 7/12

U.S. Cl. 328—143 **13 Claims**



A tape channel switching circuit having two operational amplifiers, each of which has its inputs coupled to a respective tape head. The outputs of the two amplifiers are coupled together and extended to the input of a shared amplifier. A control circuit has two output terminals, each connected to one of the input terminals of a respective amplifier. To select one amplifier to the exclusion of the other, the control circuit causes the output of the other operational amplifier to saturate.

3,681,700

ACCURATE SQUARE-LAW DETECTOR CIRCUIT

Lyle V. Rennick, Costa Mesa, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.

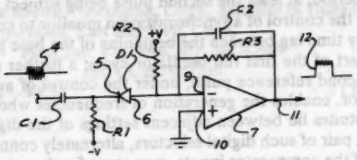
Filed Sept. 29, 1969, Ser. No. 861,789

Int. Cl. G06g 7/20

U.S. Cl. 328—144 **2 Claims**

A silicon diode is connected in series with the input of an operational amplifier having a feedback resistor, and the

modulated ac signal to be detected is fed to the input side of the diode. The signal current through the diode is an accurate



function of only the voltage across the diode, and the output voltage of the operational amplifier is proportional to such diode current.

3,681,701

FILTERING METHOD AND A CIRCUIT ARRANGEMENT FOR CARRYING OUT THE FILTERING METHOD

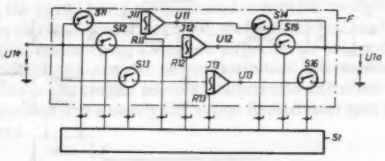
Karl Maier, Stuttgart, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 16, 1970, Ser. No. 89,609

Claims priority, application Germany, Nov. 27, 1969, P 19 59 515.4; Nov. 27, 1969, P 19 59 514.3

Int. Cl. H04b *1/10*

U.S. Cl. 328—167 **19 Claims**



A filtering method and apparatus for passing a desired band of AF signals from a broad band of signals is disclosed. The broad band is periodically integrated over fixed time intervals. An output signal is formed by arranging the integral values in sequence.

3,681,702

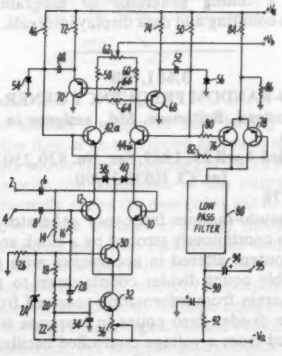
HIGH SPEED PIM DEMODULATOR

Bert H. Dann, Mountain View, Calif., assignor to International Video Corporation

Filed Aug. 31, 1970, Ser. No. 68,160

Int. Cl. H03d *1/18*

U.S. Cl. 329—102 **19 Claims**



A high speed demodulator for PIM modulated signals. A pair of time-controllable ramp generators providing ramps of constant slope that return to a fixed reference level are alternately steered by a PIM input signal to generate a series of ramps having periods commensurate with the semi-periods of the PIM modulated signal. A demodulated video signal is provided by low pass filtering the ramp waveforms.

Automatic dropout blanking is provided in alternative embodiments whereby a regenerative feature places the circuit in a self-oscillating mode to generate a video blanking when the input signal levels drops below a predetermined threshold.

3,681,703

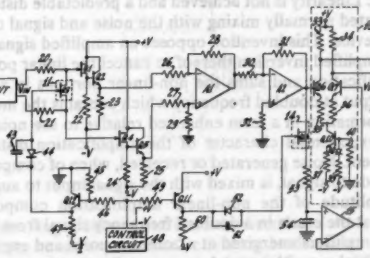
LOW LEVEL DC AMPLIFIER WITH AUTOMATIC ZERO OFFSET ADJUSTMENT

David August Johnson, Hudson, Mass., assignor to RCA Corporation

Filed Nov. 16, 1970, Ser. No. 89,668

Int. Cl. H03f *1/02*

U.S. Cl. 330—9 **7 Claims**



A low level dc amplifier which amplifies low level signals and automatically adjusts the output signal thereof to eliminate the output offset voltage.

3,681,704

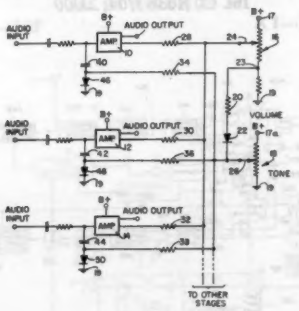
SHARED VOLUME AND TONE CONTROL SYSTEM

John R. Davidson, Lake Zurich, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 8, 1971, Ser. No. 187,620

Int. Cl. H03f *3/68*

U.S. Cl. 330—124 **8 Claims**

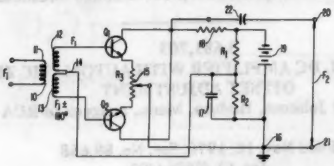


A shared volume and tone control system for a plurality of audio amplifier stages includes a volume control potentiometer coupled between a bias potential and a resistance which is grounded. The output of the potentiometer is coupled to each amplifier stage. A resistor and diode is connected in series to the junction of the volume control potentiometer and grounded series resistance and to the output of a tone control potentiometer, which is connected by separate series resistances to the junction of each capacitor and diode combination forming the tone control network between each amplifier stage and ground.

3,681,705
CIRCUIT AND METHOD FOR ENHANCEMENT OF SIGNAL-NOISE RATIO

Lewis C. Spence, 631 North "O" St., Lake Worth, Fla.

Continuation-in-part of Ser. No. 815,255, April 3, 1969. This application Dec. 30, 1969, Ser. No. 889,179
Int. Cl. H03f 1/26
U.S. Cl. 330—149 **10 Claims**

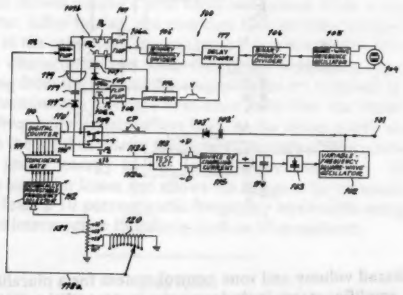


Non-linear elements utilized as amplifying devices normally are constructed to have an amplification factor as linear as possible. Linearity is not achieved and a predictable distortion is generated normally mixing with the noise and signal output of the device. This invention opposes an amplified signal with a like amplified inversion thereof to cancel the linear portions of amplification and sums the non-linear portions in a common output at doubled frequency which contains the modulation information in a form enhanced relative to the noise due to the exponential character of the amplification distortion component. Noise generated or received, when of comparable magnitude to signal, is mixed with the signal input to augment the amplitude of the non-linear amplification components notably at the crests in a doubled frequency signal from a pair of like amplifiers energized at a common point and excited in opposite phase. Noise, when generally continuous, thus enhances both the signal output and the signal-noise ratio in the output.

3,681,706
VARIABLE-FREQUENCY GENERATOR WITH DIGITAL FREQUENCY SELECTION

Peter Harzer, Eningen, Germany, assignor to Wandel u. Goltermann, Reutlingen, Germany

Continuation-in-part of Ser. No. 770,001, Oct. 23, 1968, Pat. No. 3,568,083. This application Dec. 1, 1970, Ser. No. 94,114
Claims priority, application Germany, Oct. 24, 1967, P 15 91 819.1; Dec. 6, 1969, P 19 61 329.7
Int. Cl. H03b 3/04, 23/00
U.S. Cl. 331—1 A **28 Claims**

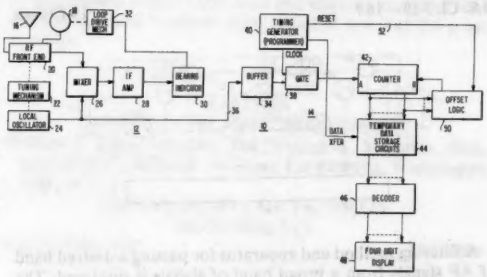


The operating frequency of an electronically adjustable oscillator is continuously determined by a digital counter establishing a variable measuring interval during which the number of oscillator cycles reaches a magnitude preset in a digital selector. A feedback circuit from the output of a comparator, receiving the values stored in the counter and in the selector, readjusts the oscillator to make the measuring interval equal to a predetermined base period (e.g., of 1 second), consistent with the selected frequency, starting concurrently with that base period. A timing circuit periodically emits a pair of reference pulses marking the beginning and the end of the base period, at least the second pulse being subject to shifting under the control of a synchronization monitor to compensate for any time lag between the beginning of the base period and the start of the first full oscillator cycle; a further shifting of the second reference pulse, under the control of an ancillary selector, enables the generation of frequencies whose chosen magnitudes lie between adjacent settings of the digital selector. A pair of such digital selectors, alternately connectable to one of the comparator inputs, may serve for the establishment of upper and lower limits of a sweep range for the oscillator frequency; a third selector, effective during the sweep, may generate a frequency marker whenever the value registered therein matches the momentary output frequency of the oscillator.

3,681,707
DIGITAL ADF TUNING INDICATOR

Stephen F. Bean, Columbus, Ohio, assignor to Autech Corporation, Columbus, Ohio

Filed April 27, 1971, Ser. No. 137,754
Int. Cl. G01s 5/02
U.S. Cl. 331—64 **15 Claims**



Disclosed is a digital tuning indicator for an automatic direction finder (ADF) equipment used in aircraft comprising a counter to measure the ADF local oscillator frequency, off-set logic modify the measured count to reflect the intermediate frequency representing the difference between the local oscillator frequency and the desired incoming frequency, and a digital display to provide an exact indication of the frequency of the incoming station to which the system is tuned. The off-set logic operates by resetting the counter when it reaches a count equal to the intermediate frequency thereby subtracting this value from the total count accumulated during each operating cycle. Control of the foregoing is provided by a timing generator or programmer which establishes the counting and data display intervals.

3,681,708
PSEUDO-RANDOM FREQUENCY GENERATOR

Merlin E. Olmstead, Baltimore, Md., assignor to The Bendix Corporation

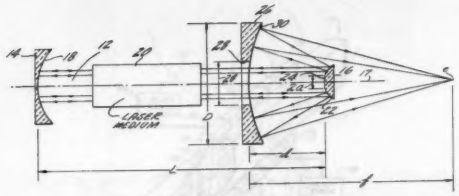
Filed April 29, 1969, Ser. No. 820,230
Int. Cl. H03b 29/00
U.S. Cl. 331—78 **17 Claims**

A binary pseudo-random frequency generator in which a shift register is continuously strobed by a clock and has its informational content altered in accordance with its acquired state. A variable count divider counts down to zero from a number set therein from information received from the shift register at the divider zero count in response to frequency signals received from a voltage controlled oscillator. Divider zero counts are also compared in a phased lock loop with a reference frequency to set the voltage controlled oscillator frequency.

3,681,709
DIFFRACTION COUPLED LASER OSCILLATOR FOCUSING SYSTEM

Clyde Owen Brown, Newington, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 27, 1970, Ser. No. 6,089
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 5 Claims

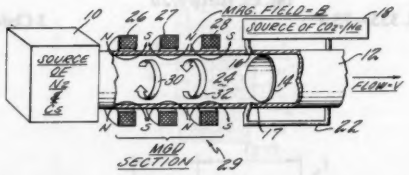


A plurality of mirrors is arranged in spaced relationship forming a laser oscillator cavity, a diffraction coupler and a focusing system. The oscillator cavity is formed between a concave mirror and a flat centrally located compound convex mirror, the cavity being proportioned to provide oscillation of the laser electromagnetic energy in the fundamental mode and the convex mirror being formed to diffract laser energy out of the oscillator. An annular mirror positioned intermediate to said concave and convex mirrors, collects said diffracted energy and focuses it as a nearly diffraction limited laser spot at the work area.

3,681,710
GAS LASER

Edmund C. Lary, and Russell G. Meyerand, Jr., both of Glastonbury, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 797,308, Dec. 23, 1968. This application May 21, 1971, Ser. No. 145,964
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 4 Claims

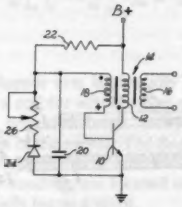


A gas laser utilizes a magnetic field having components transverse to the flow of an energizing gas, such as nitrogen, to induce currents within the energizing gas which result in electron collisions with the molecules of the energizing gas to thereby preferentially excite the energizing gas to a vibrational level conductive to the transfer of energy through resonant collisions to a lasting gas. One embodiment comprises a gas laser with electric discharge excitation of a new variety having its own intrinsic power supply whereby excitation of the energizing gas is accomplished solely through collisions with electrons created through magnetogasdynamic (MGD) effects. In a second embodiment, the magnetogasdynamics may be provided in a gas dynamic laser of the type using a rapid cooling of an energizing gas having a high heat enthalpy so as to augment the population inversions created by the freezing of energy states as a result of rapid cooling of the energizing gas, or in a gas laser employing electric discharge excitation. In one form, the lasing gas, possibly together with a relaxation agent such as helium, is injected into a laser cavity through which the preferentially excited energizing gas flows. In another form, the magnetogasdynamics are employed at the laser cavity.

3,681,711
BLOCKING OSCILLATOR WITH EXTENDED VARIABLE PULSE

Fredrick E. Hanby, Garden Grove, Calif., assignor to Tasker Industries, Los Angeles, Calif.

Filed Oct. 16, 1970, Ser. No. 81,244
Int. Cl. H03k 3/30
U.S. Cl. 331—112 8 Claims

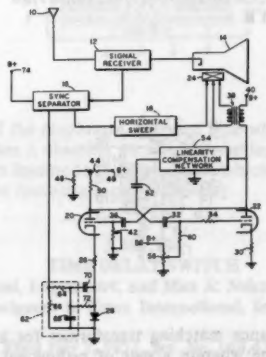


In a blocking oscillator circuit, a unidirectional device, such as a diode, in series with a selectively valued resistor is coupled between the input terminals of the active amplifier element, such as between the emitter and base of a transistor, in series with the secondary winding of a pulse transformer or the like providing regenerative positive feedback to selectively limit the development of reverse potential exceeding cutoff levels during the initial portion of an operating cycle.

3,681,712
VERTICAL SWEEP MULTIVIBRATOR HAVING FALSE TRIGGER PROTECTION

George Cleveland Waybright, Batavia, N.Y., assignor to GTE Sylvania Incorporated

Filed April 10, 1970, Ser. No. 27,218
Int. Cl. H03k 3/08
U.S. Cl. 331—145 2 Claims



For a television receiver, a vertical sweep multivibrator of the type employing first and second interconnected amplifiers with vertical sync pulses capacitor-coupled across a diode in the cathode circuit of the first amplifier. A resistor connected across the sync pulse coupling capacitor provides both a

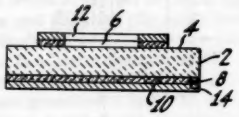
discharge path for the coupling capacitor and a bias path for the diode during the vertical trace interval to reduce false triggering in response to noise and video peaks. A resistor connected between the diode and the cathode of the first amplifier degenerates the grid circuit of the first amplifier to reduce false triggering in response to any undesired horizontal feedback signals.

3,681,713

HIGH Q CIRCUITS ON CERAMIC SUBSTRATES

Robert Stephen Degenkolb, and Eugene Raymond Skaw, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 12, 1970, Ser. No. 10,882
Int. Cl. H01p 7/00
U.S. Cl. 333—82 R 4 Claims



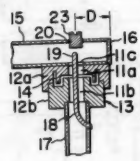
High Q circuit for operation in the UHF band comprising a ceramic substrate having on one major surface a pattern of metal particle-glass frit conductors having a coating of copper thereon, and on the other major surface a metallic ground plane of similar structure.

3,681,714

IMPEDANCE TRANSFORMERS FOR MICROWAVE TRANSMISSION LINES

Takashige Terakawa, Yokohama, Japan, assignor to Tokyo Keiki Seizosho Co., Ltd., Tokyo, Japan

Filed March 4, 1970, Ser. No. 16,539
Claims priority, application Japan, March 6, 1969, 44/19824
Int. Cl. H01p 1/06, 5/08; H03h 7/38
U.S. Cl. 333—21 R 3 Claims



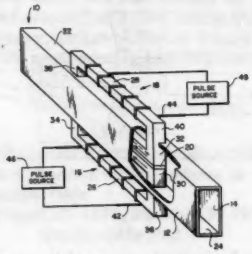
In an impedance matching transformer for a microwave transmission line wherein a pair of orthogonal rectangular waveguides are joined by a rotatable coaxial line including an inner conductor protruding into the interior of one of the waveguides to act as an impedance matching probe, an adjustable screw is provided through a wall of the one waveguide positioned right above the probe to attain impedance matching.

3,681,715

RECIPROCAL LATCHING FERRITE PHASE SHIFTER

Elmer Freibergs, West Long Branch, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed June 23, 1970, Ser. No. 49,106
Int. Cl. H01p 1/18
U.S. Cl. 333—31 A 2 Claims



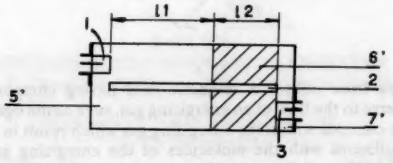
A microwave phase shifter includes a pair of spaced ferrite toroids centrally positioned within a rectangular waveguide adopted to propagate TE_{10} microwave energy. Each of the ferrites has a square hysteresis loop characteristic and each is independently energized.

3,681,716

TUNABLE MICROMINIATURIZED MICROWAVE FILTERS

Bernard Chiron, and Louis Duffau, both of Paris, France, assignors to Societe Lignes Telegraphiques Et. Telephoniques, Paris, France

Filed June 16, 1970, Ser. No. 46,597
Claims priority, application France, June 18, 1969, 6920290
Int. Cl. H01p 1/20
U.S. Cl. 333—73 S 3 Claims

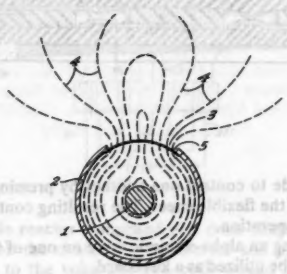


Integrated microwave filters are designed by depositing a convenient strip pattern on a substrate made at least partly of a ferrite material with a permeability varying with the applied external magnetic field. The resonance frequency of the filter is varied across a broad frequency band by varying said external field.

3,681,717
HF CABLE

Helmut Martin, Hannover, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Feb. 3, 1971, Ser. No. 112,304
Claims priority, application Germany, Feb. 24, 1970, P 20 08 413.3
Int. Cl. H01p 3/02, 3/06; H01q 13/20
U.S. Cl. 333—84 R 4 Claims

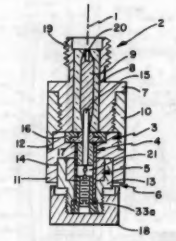


A high frequency cable with axial slot in the shield covered by a copper foil of about or thinner than the penetration depth for electromagnetic radiation.

3,681,718
MILLIMETER WAVE TRANSLATING DEVICE WITH CHANGEABLE INSERT ELEMENT

Theodore L. Kozul, Medford, and Paul A. Crandell, Bedford, both of Mass., assignors to Baytron Co., Inc., Medford, Mass.

Filed Nov. 12, 1969, Ser. No. 875,755
Int. Cl. H01p 1/00, 5/06
U.S. Cl. 333—97 R 13 Claims

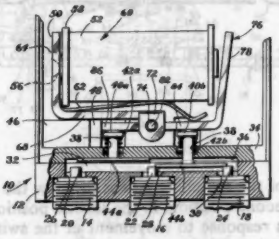


An extra high frequency (EHF or millimeter wave length) translating device for detecting, multiplying frequency or mixing waves includes an extra high frequency cut off input transmission line mechanically joined by a housing in which there is a cavity loaded with a removable insert. The insert contains a wave coupling element such as a diode mixer, multiplier, detector, etc. and is so mounted in the insert that it couples with the electric field of waves in the input line and is electrically connected with the relatively lower cut off frequency line output line. The insert also contains a choke so disposed that the extra high frequency waves conducted by the input line do not couple to the output line and so the output taken from the relatively low frequency cut off output line is substantially free of extra high frequency signals.

3,681,719
ELECTRICAL SWITCH

John Philip Treschitta, Norwalk, and Ralph Edmond Perusse, Danbury, both of Conn., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed April 13, 1971, Ser. No. 133,498
Int. Cl. H01h 51/06
U.S. Cl. 335—5 12 Claims

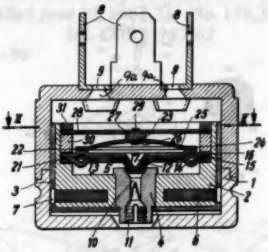


An improved clapper arm is pivotally mounted on a frame that is secured to a coil for actuating an electrical switch. The clapper arm is provided with independent fingers for depressing two pins of the switch. The fingers, which are an integral part of the clapper arm and which may be independently adjusted by bending, are located on opposite sides of a substantially centrally located pivot.

3,681,720
DIAPHRAGM RELAY

Wolfgang Priesemuth, Postkamp 13, 221 Itzehoe, Germany

Filed Aug. 2, 1971, Ser. No. 168,038
Claims priority, application Germany, Aug. 1, 1970, P 20 38 447.8
Int. Cl. H01h 7/03
U.S. Cl. 335—61 13 Claims



A relay of the diaphragm operated type which is compact and which has a chamber on one side having an adjustable throttle valve leading to the atmosphere which is operable for regulating the operating speed of the relay.

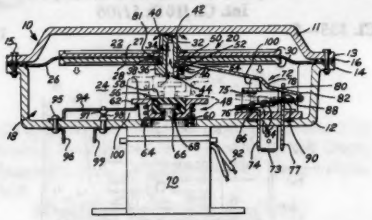
3,681,721
TIME DELAY SWITCH

Paul D. Wessel, Logansport, and Max A. Nelson, Aubur, both of Ind., assignors to Essex International, Inc., Ft. Wayne, Ind.

Filed July 7, 1971, Ser. No. 160,426
Int. Cl. H01h 7/03
U.S. Cl. 335—61 18 Claims

A time delay switch including a sealed housing divided into a pair of chambers by a flexible diaphragm. A reset orifice pin communicates the chambers with each other and includes a pair of openings in one of the chambers one of which has a flow restriction orifice therein and the other of which is opera-

tively associated with a poppet assembly to be opened and closed by the latter. Switching means is responsive to the position of the diaphragm such that when the diaphragm has been urged upward to a first position by the poppet assembly the poppet is withdrawn from the reset orifice pin in response to



movement of the switching means to allow the diaphragm to move to a second position. In the second position, the poppet assembly, in response to movement of the switching means, again acts against the reset orifice pin to move the diaphragm toward the first position at a delayed rate determined by the flow restriction orifice.

3,681,722

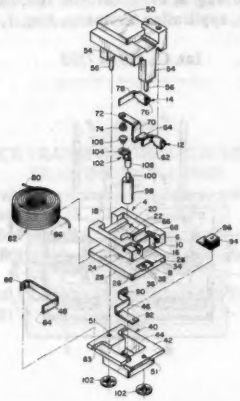
MOTOR CURRENT RELAY

Eric C. Johnsen; William M. Polk, both of Santa Monica, and Robert A. Brockman, Burbank, all of Calif., assignors to Gem Products, Inc., Santa Monica, Calif.

Filed Nov. 9, 1971, Ser. No. 196,964

Int. Cl. H01h *13/04*

U.S. Cl. 335—202 **20 Claims**



A small electromatic relay especially useful as a surge current relay wherein the component parts thereof are easily fabricated, relatively inexpensive to produce and the assembly of which is easily accomplished not requiring a high degree of skill wherein it is almost impossible to misassemble the components in other than their intended operable state.

3,681,723

MAGNETIC MEMBRANE SWITCH

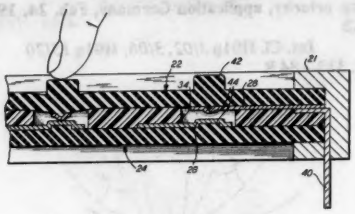
Frederick Martin Goll, Treichlers, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 9, 1971, Ser. No. 206,464

Int. Cl. H01h *1/54, 3/12*

U.S. Cl. 335—207 **11 Claims**

A magnetic membrane switch includes two opposed sheets of material which are magnetized in such a way that they repel each other. At least one of these sheets is flexible. The sheets are supported so that there is a predetermined spacing between them. The opposed faces of the sheets are provided with a thin metallic pattern. Portions of the metallic pattern



can be made to contact one another by pressing on localized sections of the flexible sheet. The resulting contact achieves a switching operation.

By placing an alpha-numeric code on one of the sheets, the switch can be utilized as a keyboard.

3,681,724

MECHANICALLY ACTUATED ELECTRIC SWITCH ASSEMBLY

Joseph Emanuel Shepard, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 1, 1971, Ser. No. 158,754

Int. Cl. H01h *5/02, 51/28*

U.S. Cl. 335—207 **5 Claims**

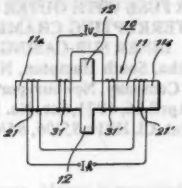
A highly reliable and readily serviceable electric switch is afforded by a simple and inexpensive magnetic reed switch capsule and a pair of tubular magnets slidably arranged over the capsule. Like magnetic poles on the annular faces adjacent each other hold the magnets apart until they are brought together by mechanical switch actuating means. When brought together by the actuating means, the change in the magnetic field about the reeds actuates the magnetic reed switch contact elements. A minimum of mechanical wear is encountered, and the magnetic reed switch capsules are quickly and conveniently replaceable. A plurality of such magnetic reed capsules may be actuated by a single pair of tubular magnets. All of the reed switch elements may be activated substantially simultaneously or the capsules may be offset with respect to one another for actuating the various reed contact elements sequentially. Push button arrangements are described for keyboard applications.

3,681,725

SATURABLE REACTOR FOR CORRECTING RASTER DISTORTION

Hiroshi Ikeuchi, Yokohama, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1970, Ser. No. 65,414
Claims priority, application Japan, Aug. 25, 1969, 44/80574
Int. Cl. H01f 7/06
U.S. Cl. 335—227 10 Claims



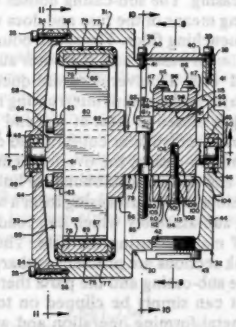
A saturable reactor comprised of a cross-shaped core having a yoke on the center portion thereof and protrusions at right angles to the yoke and two coils wound on the yoke. Each coil of the said two coils is divided into two coil parts which are wound on the right and left yoke arms. The first pair of the said two coils is constituted so as to be identical as to the direction of the magnetic generation as is the pair of coils wound on the right and left yoke arms. The second pair of coils is constituted so as to be opposite to each other as to the direction of magnetic flux generation as is the pair of coils wound on the right and left yoke arms.

3,681,726

ELECTROMAGNETO-MECHANICAL ACTUATOR

John F. Grundmann, Torrance, Calif., assignor to Moog Inc., East Aurora, N.Y.

Filed May 27, 1971, Ser. No. 147,381
Int. Cl. H01f 7/08
U.S. Cl. 335—228 15 Claims



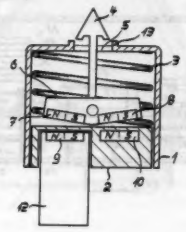
An electromagneto-mechanical actuator comprising a brushless D.C. torque motor capable of producing a torque proportional to the current fed to coil windings which are arranged as a stator, a permanent magnet being the rotor, these windings being severally arranged opposite the pole end faces of the magnet and being reversely wound so that the magnetomotive forces generated by these windings cancel out each other and thereby eliminate magnetic hysteresis. The pivotal movement of the rotor is converted to translational or rectilinear movement of an output drive element through a substantially frictionless band drive having no backlash. The actuator is preferably arranged in a closed servo loop so that the proportionality of its response can be utilized.

3,681,727

MAGNETICALLY OPERABLE BLOCKING AND CONTROL DEVICE

Hermann Hallmann, Broleck-Derscheid, Germany, assignor to MRT Magnet-Regeltechnik GmbH, Hamburg, Germany

Filed July 21, 1970, Ser. No. 56,849
Claims priority, application Germany, July 22, 1969, P 19 37 131.4
Int. Cl. H01f 7/08
U.S. Cl. 335—253 9 Claims



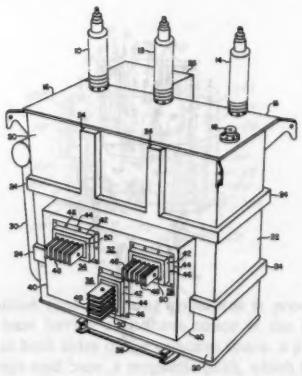
A magnetically operable blocking and control device, in which at least one of two permanent magnet means arranged in a housing has at least a portion movable selectively toward and away from the other permanent magnet means while third magnet means is selectively movable into and out of the magnetic field of one of said first mentioned two permanent magnet means for controlling the same.

3,681,728

HIGH-CURRENT FURNACE TRANSFORMER

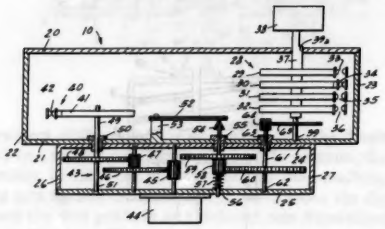
George F. Mitchell, Jr., Sharpsville; Robert D. Morris, Sharon, and Michael Nevinsky, both of Sharon, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 30, 1971, Ser. No. 158,369
Int. Cl. H01f 27/62
U.S. Cl. 336—90 11 Claims



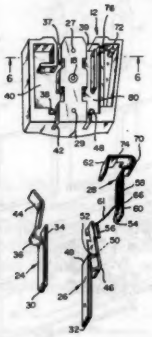
Electrical inductive apparatus having high-current secondary bushings. The secondary bushings are mounted on the casing of the apparatus in a triangular pattern. The arrangement of the bushings conveniently permits interconnection of the bushings by bus conductors to provide a delta closure for the apparatus.

3,681,729
DRYER CONTROL CIRCUIT EMPLOYING TIMER HAVING TWO SPEEDS
Alvin J. Elders, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Division of Ser. No. 836,465, June 25, 1969, Pat. No. 3,571,945. This application June 2, 1970, Ser. No. 42,676
Int. Cl. H01h 3/54, 7/06; H05b 1/02
U.S. Cl. 337—3 4 Claims



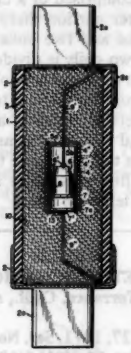
A dryer control includes two camstacks, one operating continuously with the timer motor and the other driven by the timer motor under the control of a bimetal strip, connected in series with the dryer motor to provide intermittent operation thereof in accordance with the heat generated by the motor current traversing the bimetal strip, thereby to provide two modes of operation in a dryer program having drying, cool down and anti-wrinkle cycles.

3,681,730
ELECTRIC FLASHER
Samuel Fortino, Huntington, N.Y., assignor to Gem Electric Mfg. Co., Inc., Hauppauge, N.Y.
Filed Jan. 22, 1971, Ser. No. 108,929
Int. Cl. H01h 61/06
U.S. Cl. 337—92 7 Claims



An electric flasher or outlet winker which has a pair of male prong contacts connected by an electrically actuable intermittent circuit interrupter to a pair of female contacts. The outlet winker has a non-symmetrical housing consisting of a recessed main casing for the electrically actuable intermittent circuit interrupter, and a cover for enclosing the circuit interrupter in the recessed main casing. The interrupter includes a bi-metallic thermoblade which is integral with one of the two female contacts. The other female contact is an integral part of a conductive member which also forms one of the male contact prongs. A total of three conductive members and a heating coil on the thermoblade form the electrical components enclosed in the housing.

3,681,731
CARTRIDGE FUSE WITH OUTER CASING AND OVERLOAD INTERRUPTING CHAMBER FORMED BY INNER SUB-CASING
Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed April 16, 1971, Ser. No. 134,800
Int. Cl. H01h 85/06, 85/08
U.S. Cl. 337—166 6 Claims

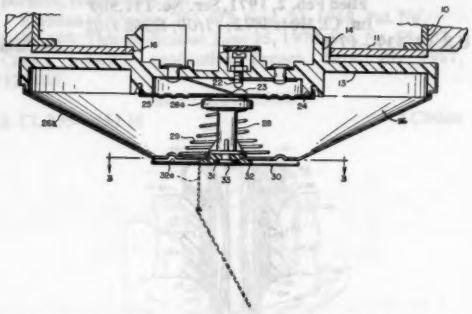


A cartridge fuse includes a main casing and a sub-casing inside the main casing. The sub-casing houses the overload current interrupting means of the fuse and does not contain a pulverulent arc-quenching filler. The space bounded by the inner surface of the main casing and the outer surface of the sub-casing is filled with a pulverulent arc-quenching filler embedding the major fault current interrupting means of the fuse. The sub-casing is closed at least at one end by a pair of discs having juxtaposed rectangular cut-outs and defining a straight narrow slit. The sub-casing, the overload current interrupting means therein and the pair of ribbon fuse link sections extending from both sides of the sub-casing form a self-contained and self-sustaining sub-assembly which can readily be handled in the process of manufacturing the fuse. The aforementioned ribbon fuse link sections are pre-bent at sharp angles and form jointly with the sub-casing and the parts therein a clip-on unit, i.e. a unit that can simply be clipped on to the main casing without any metal-forming operation and without use of any tool.

3,681,732
THERMAL DETECTOR
Thurston H. Toeppen, Poughkeepsie, N.Y., and David M. Sanger, Livingston, N.J., assignors to General Signal Corporation, Rochester, N.Y.
Filed May 12, 1970, Ser. No. 36,506
Int. Cl. H01h 37/76
U.S. Cl. 337—409 14 Claims

A thermal detector is provided for mounting on an outlet box cover. The thermal detector has a central cylindrical por-

tion in its base containing wire terminals. The cylindrical portion of the base is detachably locked within a central opening



in the outlet box cover. Means is provided on the outside of the detector for manifesting when it has been actuated.

3,681,733

CONTACTLESS PUSH-BUTTON TYPE SWITCHING APPARATUS

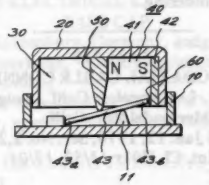
Noboru Masuda, Kawaguchi, and Tunekazu Kobayashi, Kawasaki, both of Japan, assignors to Denki Onkyo Co., Ltd.

Filed Oct. 16, 1970, Ser. No. 81,332

Claims priority, application Japan, Oct. 25, 1969, 44/101032; Oct. 25, 1969, 44/101033

Int. Cl. H01c 7/16

U.S. Cl. 338—32 R **8 Claims**



A contactless push-button type switching apparatus comprised of a box type base with the opening facing upward, a push-button cap which caps the box type base so as to cover the opening, a closed magnetic path including an elastic yoke which is provided in the base to retain the push-button cap at the home position and at least one galvano-magnetro effect device which is arranged in the magnetic path so that the density of magnetic flux applied to the galvano-magnetro effect device varies with bending of the elastic yoke when the push-button cap is pressed down.

3,681,734

HEAT SENSING PROBE

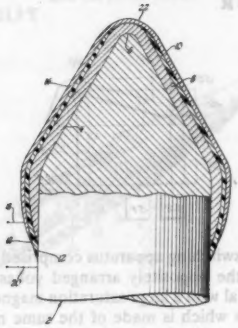
Verne R. Brown, Ann Arbor, Mich., assignor to Transidyne General Corporation, Ann Arbor, Mich.

Filed Feb. 16, 1971, Ser. No. 115,269

Int. Cl. H01c 7/00

U.S. Cl. 338—28 **5 Claims**

In accordance with the invention there is provided a heating sensing probe comprising an electric conductor rod having a tapered portion which terminates in a pointed tip at one end thereof, a film of heat sensitive electrical resistance material on the tapered portion and covering the pointed tip, a film of electrical insulator material on the film of resistance material but not covering the portion of the resistance material on the pointed tip, and a film of metal on the film of insulator material and on the portion of the resistance material which covers the pointed tip of the rod such that the film of metal is in electrical contact with the film of resistance material at the



pointed tip but is otherwise electrically insulated from the resistance material and from the rod by the film of insulator material.

3,681,735

PUSH-BUTTON TYPE SWITCHING APPARATUS

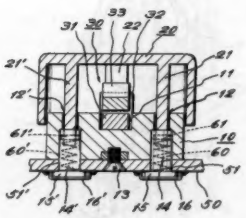
Noboru Masuda, Kawaguchi, and Tunekazu Kobayashi, Kawasaki, both of Japan

Filed Oct. 23, 1970, Ser. No. 83,292

Claims priority, application Japan, Oct. 25, 1969, 44/101026; Oct. 25, 1969, 44/101027; Oct. 25, 1969, 44/101028; Oct. 25, 1969, 44/101029

Int. Cl. H01c 7/16

U.S. Cl. 338—32 R **8 Claims**

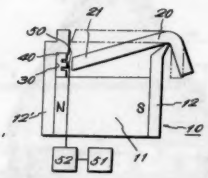


A push-button type switching apparatus is provided comprised of a base having a concave space at the center and guide holes at both sides of the concave space, a push-button cap which caps said base, a magnetic path, which is arranged in the concave space of the base, and a galvano-magnetro effect device which is positioned in said magnetic path. The magnetic path is formed with a U-shaped magnetic frame, both ends of which project upward and a moving yoke which turns around one end of the magnetic frame as the fulcrum. The push-button cap is provided with guide bars which vertically slide in the guide holes and an actuating means which causes the moving yoke to vary the density of magnetic flux applied to the galvano-magnetro effect device.

3,681,736
CONTACTLESS SWITCHING APPARATUS

Noboru Masuda, Kawaguchi, and Tunekazu Kobayashi, Kawasaki, both of Japan, assignors to Denki Onkyo Co., Ltd.

Filed Dec. 8, 1970, Ser. No. 96,079
Claims priority, application Japan, Dec. 17, 1969, 44/119916; Dec. 17, 1969, 44/119917
Int. Cl. H01c 7/16
U.S. Cl. 338—32 R 9 Claims

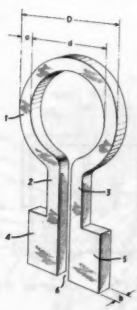


A contactless switching apparatus comprised of a U-shaped magnetic base, the oppositely arranged yokes of which are made of a material with a large saturation magnetic flux density, a rotary yoke which is made of the same material as the yokes of the base and is attached to the free end of one yoke of the base, at least one concavity which is formed at the interval surface of the other yoke of the base, a magnetic piece with a saturation magnetic flux density smaller than the yokes of the base which is fixed at the concavity and a galvano-magnetro effect device which is fixed on the magnetic piece, wherein the rotary end of the rotary yoke approaches to and separates from the galvano-magnetro effect device as the rotary yoke rotates.

3,681,737
ELECTRIC RESISTANCE HEATER

Bengt Magnusson, Kanalvagen 16, and Venanzio Bizzarri, Vitsippevagen 24, both of Hallstahammar, Sweden

Filed May 18, 1970, Ser. No. 38,416
Claims priority, application Great Britain, May 16, 1969, 25,731/69; May 16, 1969, 25,230/69
Int. Cl. H01c 1/00
U.S. Cl. 338—262 7 Claims

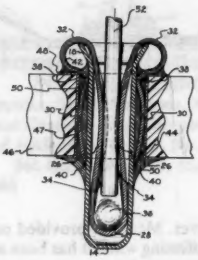


Small electric resistance elements for temperatures in the range of up to 1,680° C and made of at least 70 percent by volume $MoSi_2$ and up to 30 percent by volume of an addition having grain growth inhibiting properties at high temperatures, the particle size in the body of the finally manufactured element being less than one-fifteenth of the cross dimension of the element in the incandescent zone thereof and, in any case, less than 20 microns and further provided with a dense superficial layer of SiO_2 glass the thickness of which is between 1 and 8 microns. The incandescent zone suitably has a rectangular cross section having specified dimensions. The grain growth inhibiting addition may suitably be silicon carbide or a glass.

3,681,738
CIRCUIT BOARD SOCKET

Lindsay C. Friend, Camp Hill, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.

Filed Feb. 2, 1971, Ser. No. 111,909
Int. Cl. H01r 9/12, 11/00; H05k 1/02
U.S. Cl. 339—17 R 28 Claims

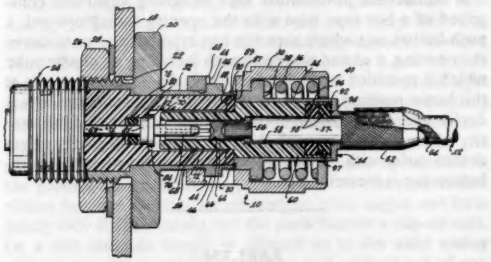


A miniature circuit board disconnect socket in which the inner legs of a M-shaped spring contact are confined within a socket body with the connecting bight portion therebetween adjacent the closed end of the body and the outer legs of the spring contact extending along the exterior of the socket body. The miniature socket is soldered to a circuit board to establish a direct electrical connection between circuitry on the board and the portion of the spring within the socket body. A solder resist may be applied to the spring adjacent the open end of the socket body to prevent molten solder from wicking into the socket during soldering.

3,681,739
SEALED COAXIAL CABLE CONNECTOR

Abraham Kornick, Los Angeles, Calif., assignor to Reynolds Industries, Inc., Marinadel Rey, Calif.

Filed Jan. 12, 1970, Ser. No. 2,293
Int. Cl. H01r 13/52, 17/04
U.S. Cl. 339—94 C 5 Claims



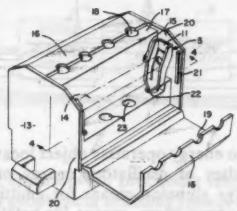
An improved coaxial cable connector having a pin and socket connection for the inner conductor and a bayonet connection between tubular shells for the shielding conductor in which insulating sleeves are disposed between the inner and shielding conducting elements with air spaces therebetween as well. Sealing means of high dielectric, resilient, insulating material and provided to hermetically seal the air spaces against entrance of outside air and also to interpose the insulating material in the air path between the interior and shielding conducting elements.

3,681,740

FUSE CONNECTORS

Daniel Dumeige, Pontoise, France, assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 761,473, Sept. 23, 1968, Pat. No. 3,579,179. This application June 25, 1970, Ser. No. 59,852
Claims priority, application France, Sept. 27, 1967, 67122483
Int. Cl. H01r *23/08*
U.S. Cl. 339—151 M 2 Claims



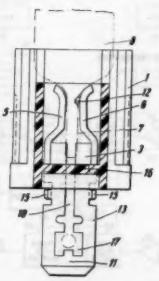
A fuse connector has a fuse contact formed from a sheet metal with a body having an apertured extension, a resilient tongue in the aperture engaging an end of a fuse cartridge, side portions along the aperture embracing sides of the cartridge, and a bar joining the side portions serves to limit deflection of the tongue. A housing houses the fuse connectors to provide a connector assembly and it has hinged cover means for access to the fuse; commoning strips may be employed to connect the fuse connectors with other selected connectors of the connector assembly.

3,681,741

HOLDER FOR ELECTRICAL LAMPS WITH A GLASS BASE CAP

Norbert Lichte, Ravensburg, Germany, assignor to Firma Rafi Raimund Finsterholgl, Elektrotechnische Spezialfabrik, Ravensburg, Germany

Filed Nov. 9, 1970, Ser. No. 87,833
Claims priority, application Germany, May 14, 1970, P 20 23 605.9
Int. Cl. H01r *19/28, 13/12*
U.S. Cl. 339—170 7 Claims



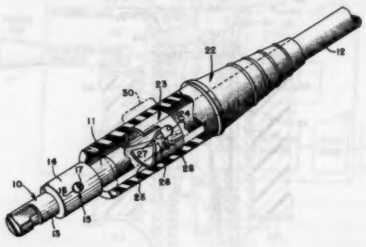
A holder for electrical lamps with a first glass base cap, in particular for small lamps, which comprises a cup-like body of insulating material, and two contact strips inserted in the cup-like body. The two contact strips include a section projecting from the holder body and serving the electrical connection. Two resilient legs extend in about the longitudinal axis of the holder. The resilient legs are angularly bent substantially 90° relative to the first section within the range of the glass base cap to be held between the resilient legs. The first section of each of the contract strips has a longitudinal slot extending therethrough up to the connecting stay, and the entire contact strip is of increased material strength, the first sections projecting from the holder body constitute a plug for a socket sleeve.

3,681,742

ELECTRICAL CONNECTOR, SLEEVE, AND METHOD FOR ASSEMBLING

Albert P. Newman, Springfield Township, Hamilton County, Ohio, assignor to TKDI & Sealtron Corporation

Continuation of Ser. No. 701,242, Jan. 29, 1968, abandoned. This application July 1, 1970, Ser. No. 56,109
Int. Cl. H01r *13/32*
U.S. Cl. 339—213 T 8 Claims



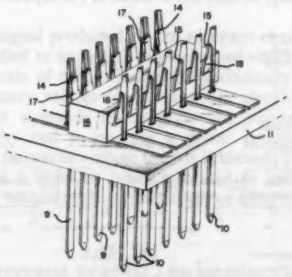
Means for uniting an electrical connector which terminates an electrical cable and in insulating sleeve therefor is provided, detent engaging means with at least one perpendicular radial wall in the connector for interaction with a collar within the insulating sleeve, such collar having a detent portion capable of locking engagement with said detent engaging means, providing such means for unification. Embodiments employing a niche, a groove and a stud as such detent engaging means are shown.

3,681,743

ELECTRICAL CIRCUITS AND METHOD OF FABRICATION

Peter K. Townsend, New Cumberland, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed July 8, 1970, Ser. No. 53,153
Int. Cl. H01r *9/08*
U.S. Cl. 339—218 R 2 Claims

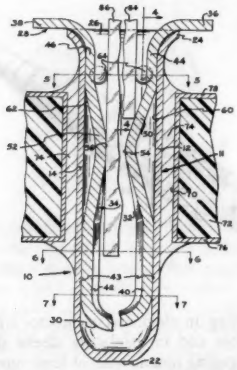


Electronic circuits are fabricated on circuit boards of the type on which components are mounted with leads extending generally perpendicular to and away from the board. The leads are latched under projections extending from pairs of pins. This positively locks the components in place during dip soldering. Each pin is an elongated one-piece thin metal sheet member having tabs extending from the terminal portion. The member is formed into a U-shape so that the tabs extend from the pin to form the projection under which the leads can be latched.

3,681,744
CIRCUIT BOARD SOCKET

Billy E. Olsson, New Cumberland, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.

Filed June 16, 1970, Ser. No. 46,648
Int. Cl. H01r 11/22
U.S. Cl. 339—256 R 20 Claims

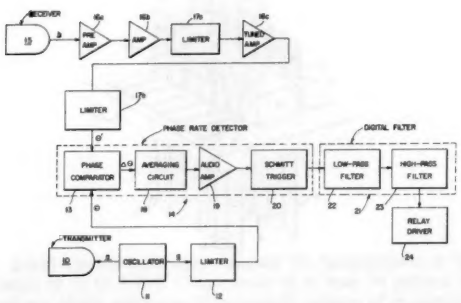


A miniature circuit board disconnect socket which may be positioned in a circuit board hole and dip-soldered to form an electrical connection with printed circuitry on both sides of the board. The socket includes an elongate socket body of square cross section which is closed at one end and open at the other end. A spring contact formed of strip stock is confined within the body to make electrical connection with a lead inserted into the socket.

3,681,745
DETECTION SYSTEM EMPLOYING DIGITAL BANDPASS FILTERING CIRCUITRY

David E. Perlman, 59 Stoneham Drive, Rochester, N.Y., and Donald S. Degen, 124 Yarmouth Road, Rochester, N.Y.

Filed March 19, 1970, Ser. No. 20,887
Int. Cl. G01s 9/66
U.S. Cl. 340—1 R 10 Claims

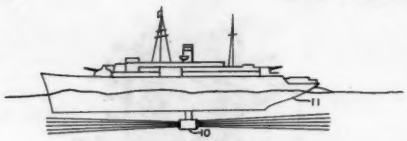


An acoustic detection system of the Doppler variety is provided with digital filtering circuitry for eliminating the false alarming effects of various spurious sources which are situated in or near a space being monitored for a predetermined type of motion. Squaring circuitry is provided for converting the normally analog waveforms to digital waveforms whereby simple digital band-pass filters may be used to sharply discriminate against those frequencies considered non-attributable to the particular motion of interest.

3,681,746
LONG RANGE OBSTACLE LOCATOR SYSTEM

Robert M. Page, Camp Springs, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 2, 1952, Ser. No. 264,627
Int. Cl. G01s 9/68
U.S. Cl. 340—3 R 12 Claims

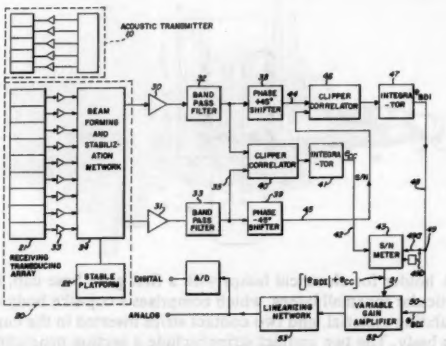


8. In an echo energy operative object locator system, means generating pulses of oscillatory energy of finite duration, directive energy emission means for emitting the generated energy in a narrow beam, means for rotating said directive energy emission means at a rate providing several revolutions thereof during each pulse to thereby subdivide each pulse into a group of short duration pulses with the individual pulses of said group separated by periods greater than the pulse duration of said individual pulses, directive reception means for intercepting echo energy pulses returned by an object, means for storing the intercepted short duration echo energy pulses occurring over a period of time, control means for regulating the reproduction of stored echo energy pulses wherein the time separation between the individual reproduced pulses is reduced to less than the duration of the individual reproduced pulses, and narrow bandwidth frequency selective means responsive to the reproduced pulses for combining reproduced pulse energy occurring over a period of time.

3,681,747
SEA BOTTOM SLOPE MEASURING APPARATUS

George M. Walsh, Middletown, R.I., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 776,722, Nov. 18, 1968, abandoned.
This application July 6, 1970, Ser. No. 56,129
Int. Cl. G01s 9/66, 3/00
U.S. Cl. 340—3 R 13 Claims

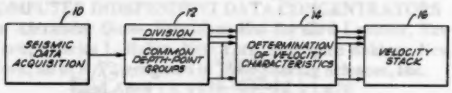


Sea bottom slope is measured by projecting an acoustic beam upon the sea bottom with reference to a local vertical and measuring the arrival angle between incident echos and the local vertical. Split receiving beams having separated phase centers are utilized to measure the arrival angle. In order to reduce the effects of noise, phase angle magnitude and sign are determined by signal processing means which utilize a greater proportion of the available energy in large time bandwidth product signals.

3,681,748
VELOCITY STACK PROCESSING OF SEISMIC DATA

Emory E. Diltz, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 799,155, Feb. 12, 1969. This application Oct. 2, 1970, Ser. No. 77,443
Int. Cl. G01v 1/28
U.S. Cl. 340—15.5 TC 20 Claims

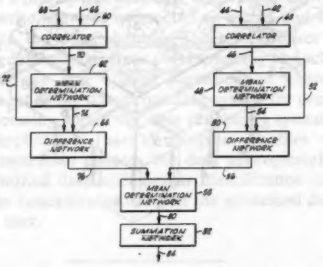


A method and apparatus for processing seismic trace data as derived from a geophysical sounding system whereby a plurality of seismic traces representative of spatially consecutive sounding positions is processed in the time-space domain as a plurality of common depth point groupings; thereafter, specific event information is derived from trace information for each common depth point and a plurality of such similar events are limited through predetermined velocity-time patterns to present primary event data in the velocity-time domain.

3,681,749
METHOD AND APPARATUS FOR DETERMINING NEAR-SURFACE CORRECTIONS FROM SEISMIC DATA

Carman M. Ferree, Ponca City, and Douglas F. Miller, Surrey Hills, both of Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Dec. 30, 1970, Ser. No. 102,624
Int. Cl. G01v 1/28
U.S. Cl. 340—15.5 TC 15 Claims

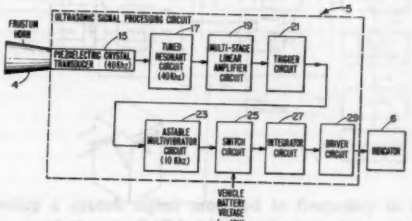


A method and apparatus for determining near-surface corrections wherein a predetermined number of seismic waves are reflected from adjoining basement points and the arithmetic mean of the differences in times for an event on the parts of an n-fold stack is determined to represent the dip between two adjoining basement points, the dip being subtracted from each difference between the seismic wave travel times, one seismic wave being reflected from one basement point and the other seismic wave being reflected from an adjoining basement point. The differences thus determined substantially represent the difference between the effect of the near-surface layer beneath the adjacent receptor or source positions. The arithmetic mean of these differences is then utilized to determine a total time static correction factor.

3,681,750
OBJECT DETECTION APPARATUS

Vincent E. Larke, Burlington, Mass., assignor to GTE Laboratories Incorporated

Filed July 2, 1970, Ser. No. 51,758
Int. Cl. H04b 1/00
U.S. Cl. 340—16 R 8 Claims



A passive ultrasonic vehicle detection apparatus for use with a vehicle such as an automobile, truck, or bus for detecting and indicating the presence of other vehicles in predetermined regions rearward of the subject vehicle, for example, in travel lanes adjacent to the travel lane of the subject vehicle or in so-called "blind" zones of the subject vehicle. When a vehicle is present in one of the adjacent lanes or in a blind zone, signals including ultrasonic signals which are generated inherently by the vehicle, for example, due to a combination of factors such as engine and body vibrations, and engine and tire noises, are received by a frusto-conical signal-receiving horn mounted in a rearward location of the subject vehicle and applied to a piezoelectric crystal transducer. The piezoelectric transducer has a predetermined resonant frequency equal to the frequency of particular ultrasonic signals generated inherently by all existing engine-driven road vehicles. The piezoelectric transducer operates in response to the various signals received from the frusto-conical signal-receiving horn to produce an electrical output voltage which is greatest for ultrasonic signals of the predetermined resonant frequency. The output voltage produced by the piezoelectric transducer is then applied to a resonant circuit tuned to the predetermined resonant frequency to achieve the desired system bandwidth.

The output signal produced by the resonant circuit is amplified and applied to an astable multivibrator which operates to produce a train of output pulses for periodically applying the vehicle battery voltage to an integrator circuit. The integrator circuit operates to integrate the voltage pulses received thereby and to operate a driver circuit when a predetermined threshold voltage level is achieved. The driver circuit operates a lamp or other indicator to indicate the presence of the vehicle in the adjacent lane or blind zone.

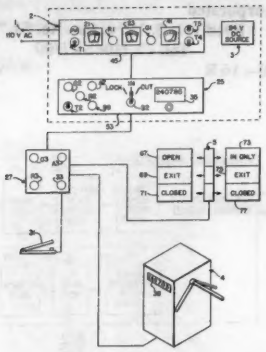
3,681,751
TRAFFIC CONTROL SYSTEM AND BIDIRECTIONAL SIGN THEREFOR

Stuart David Le Barre, 14021 W. Lincoln, Oak Park, Mich.

Filed Oct. 13, 1969, Ser. No. 865,598
Int. Cl. G07c 9/02
U.S. Cl. 340—22 7 Claims

A traffic control system including many electrically controlled turnstiles for selectively permitting persons to pass through in a first direction or a second direction, and for selectively preventing persons from passing through. A control unit remote from the turnstiles is electrically connected to each of the turnstiles and is capable of enabling one or more of the turnstiles to be used for entrance or egress, or for being blocked. A bidirectional light sign connected to each turnstile

indicates the instantaneous purpose and capability of that turnstile. The entire system operates from a main electric



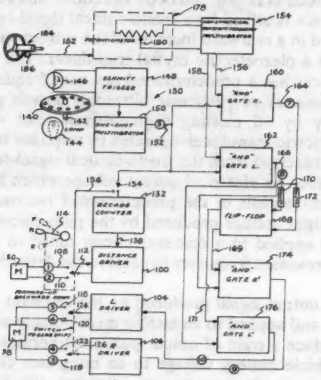
power source. An auxiliary power source automatically operates the entire system when a malfunction or failure takes place in the main power source.

3,681,752

VEHICLE SELF-TRACKING SYSTEM

Richard G. Cuddihy, 2515 Zearing Avenue, Alburquerque, N. Mex.

Filed Oct. 8, 1970, Ser. No. 79,015
Int. Cl. G01c *21/00*
U.S. Cl. 340—24 **17 Claims**



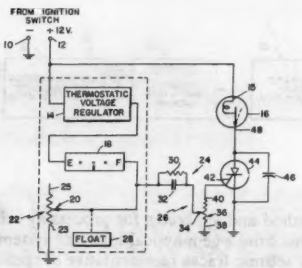
A system for permitting the operator of a motor vehicle to determine the location of his vehicle relative to a map includes an indicator movable beneath the map and having a concentrated light source which shines through the map to give the vehicle location. The drive and steering of the indicator are electrically slaved to the linear speed and turning movements of the vehicle. The indicator includes a steerable drive wheel which may engage a mode of the terrain shown by the map or a flat surface if any error which might be introduced by the latter is within the limits of tolerance desired. The electronic circuitry for the drive and steering of the indicator includes a main pulse generator having an output frequency related to the instantaneous speed of the vehicle and a further, pulse generator having alternate pulse outputs whose pulse durations are variable in opposite sense with respect to each other in response to steering movements imparted to the vehicle. The indicator drive is controlled by the speed-related pulses whereas steering of the indicator is effected by ANDing signals derived from both circuits. The circuitry includes a novel pulse generator for producing the alternate pulses.

3,681,753

ELECTRONIC FUEL LEVEL WARNING DEVICE

George J. Whalen, 612 Woodland Hills, White Plains, N.Y., and Rudolf F. Graf, 111 Van Etten Blvd., New Rochelle, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,377
Int. Cl. B60q *1/00*
U.S. Cl. 340—59 **3 Claims**



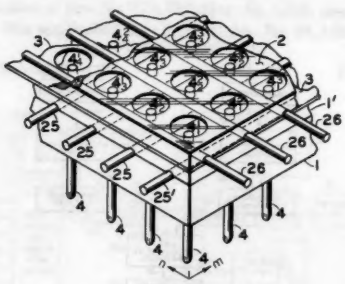
An electronic system for providing a warning when the gasoline level in a fuel tank falls to a predetermined level. A flashing light indication warns the motorist when the predetermined level is reached. The flashing light is actuated through a silicon controlled rectifier by a float in the fuel tank provides a signal through an electronic assembly to activate the silicon controlled rectifier.

3,681,754

SELF LUMINOUS SHIFT REGISTER INFORMATION DISPLAY

Thomas L. Baasch, 61 Windmill Drive, Huntington, N.Y.

Filed July 28, 1969, Ser. No. 845,414
Int. Cl. H04q *9/00*
U.S. Cl. 340—168 R **20 Claims**



A gas discharge device comprising an array of cold cathode glow discharge cells in cooperative relation and adapted to show luminosity of selectable cells in a programmable pattern of light bits. It is a self luminous information display and a shift register with visible store.

Prior art devices are glow discharge arrays having discrete element or x-y address mechanisms, glow discharge counting tubes which move a single glowing bit one step for each input pulse and shift registers which accept a sequence of data bits and by serial or parallel entry means store that sequence for subsequent retrieval, or, continuously move the data through with subsequent delayed output.

The prime element of invention is the combination of shifting means with a glow discharge matrix display. Shifting means employing one or more stepping cathodes with bidirectional stepping capability; shifting means employing

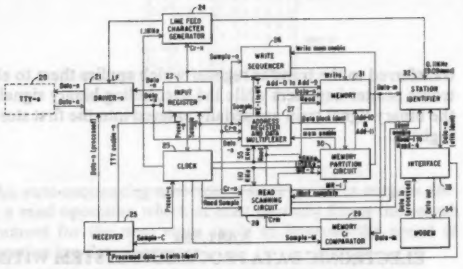
one stepping cathode with preferential glow stepping cathodes and a magnetic propulsion shifting means can be adapted individually or in combination using common conductor means to accomplish the aim of the invention. Glow elements can be ignited and read out at any and all elements but preferentially at one or more peripheral cells of the array. Light address of the array is claimed.

3,681,755

COMPUTER INDEPENDENT DATA CONCENTRATORS

John Alexander Stone, Brooklyn; Hal Bernard Lamster, New York; Charles L. Baker, New York, and Spiro Bakiras, New York, all of N.Y., assignors to Time Sharing Sciences, Inc.

Filed April 13, 1970, Ser. No. 27,678
Int. Cl. G06f *9/18, 15/40*
U.S. Cl. 340—172.5 **2 Claims**



A multiplex data concentration system for interconnecting multiple users at a single station with a remotely located digital data processing system over a single data channel (such as a telephone line) without modification to the data processing system or the data processing system side of the line. A major feature of the system is a unique data concentrator which is located on the user station side of the data channel, and has a plurality of user data interchange devices (such as teletypewriter devices connected as inputs and an output connected to the data channel. The concentrator includes preassigned data storage areas corresponding to each data interchange device and utilizes identification characters to prefix data sent to the data processing system for proper routing and processing within the data processing system. An appropriate application (user's) program enables the data processing system to process the data appropriately and to prefix transmitted data with similar identification characters to enable the concentrator to route the processed data to the appropriate user.

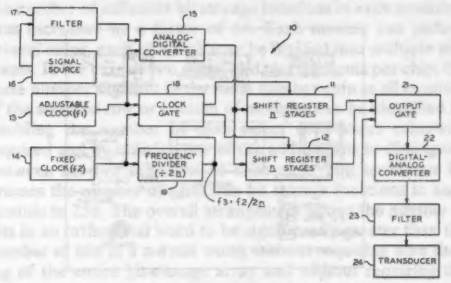
3,681,756

SYSTEM FOR FREQUENCY MODIFICATION OF SPEECH AND OTHER AUDIO SIGNALS

Mahlon D. Burkhard, Hinsdale, and Richard W. Peters, Algonquin, both of Ill., assignors to Industrial Research Products Inc., Elk Grove Village, Ill.

Filed April 23, 1970, Ser. No. 31,159
Int. Cl. G06f *3/16;* G10l *1/08;* H03k *13/22*
U.S. Cl. 340—172.5 **12 Claims**

A system for multiplying the frequencies of a speech signal, or other audio signal, by a given multiplication factor, comprising an analog-digital converter for converting an audio signal to a digital signal having a bit rate f1 and means for temporarily storing that digital signal. The system further comprises apparatus for reading out the stored digital signal, in groups of *n* digits, at a bit rate *f*2, with means for synchronizing the readout apparatus to connect the groups of *n* digits in sequence. A digital-analog converter uses the digital readout



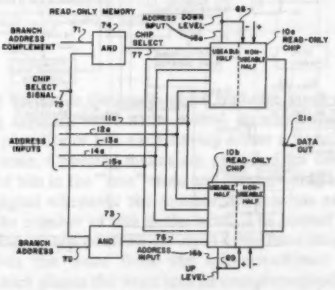
to develop a speech signal modified in frequency in accordance with the rate *f*1/*f*2 but having the same time span as the original speech signal.

3,681,757

SYSTEM FOR UTILIZING DATA STORAGE CHIPS WHICH CONTAIN OPERATING AND NON-OPERATING STORAGE CELLS

Charles A. Allen, Poughkeepsie; Stanley R. Andersen, Hopewell Junction; Robert G. Kinkade, Wappingers Falls; Thomas Kwei, Wappingers Falls, and Richard H. Robinson, Wappingers Falls, all of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed June 10, 1970, Ser. No. 45,116
Int. Cl. G06f *1/00*
U.S. Cl. 340—172.5 **10 Claims**



A system is described in which semiconductor storage chips are tested and sorted into categories based upon the number and location of good operating storage cells. Selected chips of this kind are externally wired to utilize the operable storage cells of each chip.

3,681,758

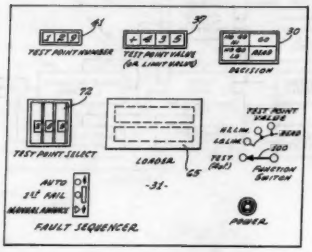
DATA ACQUISITION UNIT WITH MEMORY

Stanley Oster, Anaheim; Herbert I. Higashi, Rowland Heights, and Otto Dorner, Fullerton, all of Calif., assignors to Northrop Corporation, Beverly Hills, Calif.

Filed April 29, 1970, Ser. No. 32,899
Int. Cl. G05b *19/42, 23/02*
U.S. Cl. 340—172.5 **14 Claims**

A small automatic test system having input connections for a multiplicity of test points from an outside system to be tested. This test unit rapidly scans through the test points and measures the voltage value at each point as compared to a predetermined tolerance range recorded in the test system memory, giving a GO and NO GO type of display along with the measured value and the corresponding test point number

of a NO GO measurement. The limits defining the tolerance range for each test point measurement are loaded into the memory from a magnetic tape unit or from a manual loader,



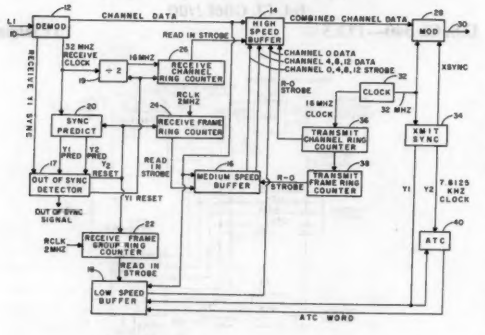
which units are parts of the present test system. The tape may be pre-recorded or made up on the test system itself. Operating speed of the system is over 2500 test points per second.

3,681,759

DATA LOOP SYNCHRONIZING APPARATUS

John Dan Hill, III, Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.

Filed Aug. 6, 1970, Ser. No. 61,559
Int. Cl. H04j *3/08*
U.S. Cl. 340—172.5 **13 Claims**



Apparatus for use with a multichannel, time division multiplex, multidata rate closed data loop to variably compensate for delays incurred during circulation of the data bits around the loop. Incoming data is stored and retransmitted to the loop whereby the retransmission of data bits in a given data rate channel time slot occurs an integral number of time slot repetition periods after original transmission of data in that channel time slot.

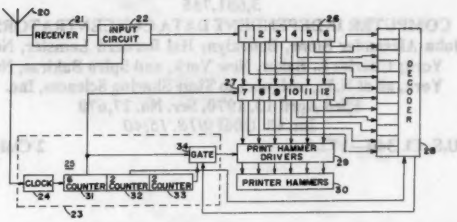
3,681,760

BINARY SIGNAL UTILIZATION AND SELECTIVE ADDRESS DETECTION SYSTEM

Roger F. Salava, Arlington Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 24, 1970, Ser. No. 66,428
Int. Cl. G11c *7/00*
U.S. Cl. 340—172.5 **9 Claims**

A binary signal utilization and selective address detection system for an electronic printer wherein a first storage register serially accepts and stores binary signals in a binary signal train, then simultaneously couples all binary signals in the first storage register to a transfer register. The transfer register is provided to allow binary address signals entered into both registers to be sampled by a detector for a desired binary address. If the desired binary address is recognized, the detector causes subsequent binary print signals to cause operation of electronic printer hammers. Such print signals are serially applied to the first storage register, and then simultaneously



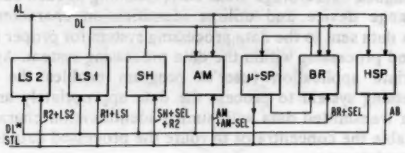
transferred to the transfer register which applies them to electronic printer hammers while the succeeding binary signals in the binary signal train are serially entered into the first storage register.

3,681,761

ELECTRONIC DATA PROCESSING SYSTEM WITH PLURAL INDEPENDENT CONTROL UNITS

Claus H. Schuenemann, Schonaich, and Wilhelm G. Spruth, Sindelfingen, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 1, 1970, Ser. No. 33,567
Claims priority, application Germany, May 2, 1969, P 19 22 415.8
Int. Cl. G06f *15/16*
U.S. Cl. 340—172.5 **5 Claims**



A data processing system which consists of individual, essentially highly integratable, storage structures, which are linked with each other by means of a bus system, without the use of connecting, unordered logic circuits, and which perform the functions of the system control. The data processing system is composed of independent control units; the actual system control (CPU), and the individual controls (CON) associated with the Input/Output devices. A common bus system is employed for data and signal communication between the units. All these controls have identical circuitry, differing from each other only by the specific microprogram used. Logic personalization of the individual controls is ensured by their specific microprogram or by their table stored in read-only storages. A central control within the individual control units is not used, since a part of the operation code in each function unit is separately decoded.

3,681,762

AUTO-SEQUENCING ASSOCIATIVE STORE

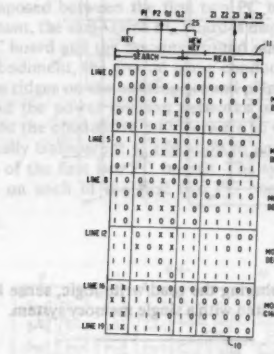
John F. Minshull, Winchester, and Alan S. Murphy, Chandlers Ford, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1970, Ser. No. 82,043

Claims priority, application Great Britain, Nov. 27, 1969, 57,983/69

Int. Cl. G06f 9/20, 9/16, 7/00

U.S. Cl. 340—172.5 10 Claims



An auto-sequencing associative store provides outputs during a read operation which at least partially forms the search argument for the next store cycle to improve the speed of operation in a data processor.

3,681,763

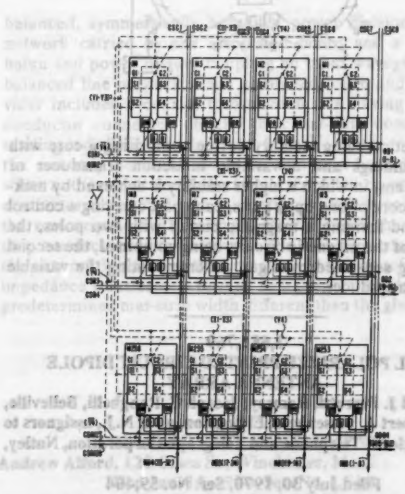
SEMICONDUCTOR ORTHOGONAL MEMORY SYSTEMS

Robert M. Meade, Wassaic, and Richard H. Robinson, Wappingers Falls, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed May 1, 1970, Ser. No. 33,603

Int. Cl. G11c 5/02

U.S. Cl. 340—173 93 Claims



A semiconductor orthogonal memory system in which a grid of row and column chip select conductors, and a grid of row and column data conductors, are coupled to an array of memory modules. Common address bits are extended to all modules. The memory is several (eight, in the illustrative embodiment) times faster than the processor with which it operates, and accordingly three of the address bits are cycled during each read or write processor operation. This results in a sequence of eight bits on each row or column data conductor; the number of utilizable bit storage locations in each module is thus increased by a factor of 64. Each module can include several chips, each of which may be divided into multiple segments. In the case of two chips, and two segments per chip, the same number segment in the same number chip in all modules of the selected row or column of modules can be identified by doubling the number of chip select conductors otherwise required and by utilizing one of the address bits to distinguish between the two segments on each chip. This technique increases the number of utilizable bit storage locations in each module to 256. The overall arrangement allows the number of bits in an orthogonal word to be significantly greater than the number of bits in a normal word, without requiring wire linking of the entire bit-storage array and without requiring the array as a whole to be dimensioned to match the entire orthogonal memory.

3,681,764

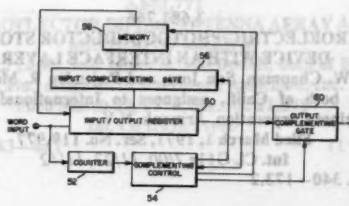
LOW POWER MEMORY SYSTEM

Theodore A. Conant, Jr., Sylmar, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed March 15, 1971, Ser. No. 124,116

Int. Cl. G11c 7/00

U.S. Cl. 340—173 R 10 Claims



A memory system is disclosed which includes input means for receiving a binary word to be stored, in which the word comprises a plurality of bits each having either a "one" state or a "zero" state. Counting means are provided for counting the number of bits in the "one" state and for providing an output control signal whenever the number of such bits exceeds one-half of the number of bits in the word. The output signal of the counting means controls an input complementing gate which receives the word from the aforementioned input means and which places the word into its complemented state, that is into a state in which all of the "one" bits are changed into "zero" and all of the "zero" bits are changed into "one" bits, whenever the control signal is applied to the complementing gate. The word, in either its complemented or its uncomplemented state, is then applied to a conventional memory, and an additional control bit is also applied to the memory to indicate the complementary state of the word as being stored in the memory.

3,681,765

FERROELECTRIC/PHOTOCONDUCTOR MEMORY ELEMENT

Daniel W. Chapman, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

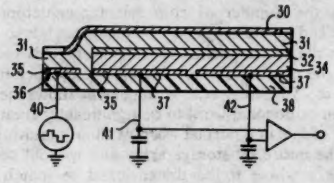
Filed March 1, 1971, Ser. No. 119,973

Int. Cl. G11c 7/00, 11/22, 11/42

U.S. Cl. 340—173.2 17 Claims

A memory element for use in photoelectric data recording apparatus of the type described in U.S. Pat. No. 3,148,354, comprising a sandwich-like structure of a top conductive electrode in electrical contact with a photoconductive material in

electrical contact with a discontinuous interface layer in electrical contact with a ferroelectric material, in electrical contact with a conductive electrode substrate. The top conductive electrode and discontinuous interface layer are chosen to be blocking contact with the photoconductor in the dark, and injecting in the light. Further, one of the electrodes comprises a plurality of individual electrodes of stripe configuration while the other electrode comprises a bus bar portion and at least one reference or "ground" portion. The bus bar portion is in



light controlled electrical contact with at least one localized part of the stripe configured electrodes via the photoconductor material. Where the top electrode comprises the bus bar and reference or ground portion and the discontinuous interface layer is a series of electrically conductive islands and the bottom electrode is in a striped electrode configuration, then by proper arrangement of islands and stripes, a focusing effect is achieved to allow switching of the ferroelectric material with a lower current density in the photoconductor.

3,681,766

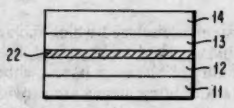
FERROELECTRIC/PHOTOCONDUCTOR STORAGE DEVICE WITH AN INTERFACE LAYER

Daniel W. Chapman, San Jose, and Rajendra R. Mehta, Palo Alto, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed March 1, 1971, Ser. No. 119,977

Int. Cl. G11c 7/00, 11/22, 11/42

U.S. Cl. 340—173.2 **15 Claims**



A memory element for use in photoelectric data recording apparatus comprising a layered structure of a conductive substrate, ferroelectric material, discontinuous interface layer, photoconductor, and top conductive electrode. The top conductive electrode an discontinuous interface layer are chosen in conjunction with the photoconductor to act as blocking contacts in the dark and injecting contacts in the light. It is also desirable, although not essential, that the discontinuous interface layer make a blocking contact with the ferroelectric.

3,681,767

MAGNETIC CORE MEMORY PROVIDING BOTH NON-ALTERABLE AND ELECTRICALLY ALTERABLE LOCATIONS

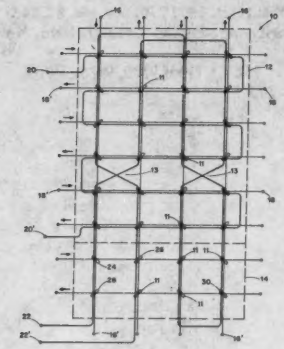
Dana W. Moore, Dover, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed April 29, 1970, Ser. No. 32,801

Int. Cl. G11c 5/02, 11/06

U.S. Cl. 340—174 M **12 Claims**

A read only memory utilizes magnetic cores rotated 90° from the normal orientation about the read/write coincident wires so that their magnetic state cannot be switched, thereby indicating the storage of logical zeroes regardless of the actual state stored. Logical ones may be stored by orienting the magnetic cores in their normal orientation, so that they can be switched. The read only memory may also be combined at random locations in a standard read/write magnetic core



memory thereby sharing the read/write logic, sense logic and inhibit logic associated with a single memory system.

3,681,768

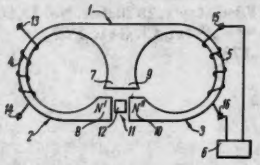
MAGNETIC ANALOG MEMORY DEVICE

Vladimir Alexandrovich Zelensky, Kiev, Union of Soviet Socialist Republics, U.S.S.R., assignor to Institut Elektrodinamiki Akademii Nauk, Kiev, U.S.S.R.

Filed July 28, 1969, Ser. No. 845,215

Int. Cl. G11c 27/00, 11/08

U.S. Cl. 340—174 AN **1 Claim**



A magnetic analog memory device comprising a core with control windings and a variable induction transducer or sensing means, in which a higher stability is achieved by making up the core of two open parts, each part carrying a control winding and forming a magnetic circuit with two poles, the first poles of the magnetic circuits being combined, the second poles being separated by a gap accommodating the variable induction transducer.

3,681,769

DUAL POLARIZED PRINTED CIRCUIT DIPOLE ANTENNA ARRAY

Emmanual J. Perrotti, Ramsey; Joseph C. Ranghelli, Belleville, and Robert A. Felsenheld, Livingston, all of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

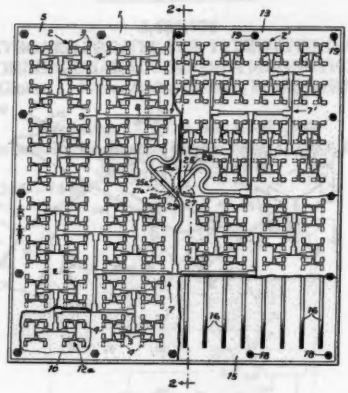
Filed July 30, 1970, Ser. No. 59,404

Int. Cl. H01q 21/12

U.S. Cl. 343—814 **18 Claims**

An antenna array is provided by stacking two PC boards in a superimposed relationship above a housing acting as a ground

plane. Each of these two PC boards contain thereon a symmetrical arrangement of photo etched or printed mat-strip power division networks and dipole elements providing linear polarization, the dipole elements on one PC board being oriented with the dipole elements on the other PC board to provide orthogonal linear polarizations. A ground plane for the dipole elements on the upper PC board is provided by parallel, spaced conductive members in a superimposed, parallel relationship with the dipole elements of the upper PC board. In one embodiment, the ground plane conductive members are provided by conductive strips on a third PC board disposed between the first two PC boards. In another embodiment, the same third PC board is disposed between the lower PC board and the housing ground plane therefore. In a third embodiment, the ground plane conductive members are formed as ridges on the housing ground plane. The dipole elements and the power division networks of the first two PC boards and the conductive members are so oriented that they are mutually transparent to radiation to and from the dipole elements of the first two PC boards. The symmetrical dipole elements on each of the first two PC boards are fed by a



balanced, symmetrically branched power division mat-strip network carried by the associated board and a combined balun and power divider coupling an input waveguide to the balanced line network. Each combined balun and power divider includes a coaxial transmission line having its center conductor connected directly to a mat-strip conductor extending radially in two directions from the center conductor to the mat-strip network, this latter mat-strip having the same width as the mat-strip conductors of the network, and its outer conductor connected to a mat-strip conductor connected to the mat-strip network having a greater width than the mat-strip conductors of tne network. The mat-strip conductors of the network includes at the branching locations reflectionless impedance transformers formed by a predetermined length of predetermined mat-strip width different than the given width.

3,681,770

ISOLATING ANTENNA ELEMENTS

Andrew Alford, 120 Cross St., Winchester, Mass.

Filed Jan. 14, 1970, Ser. No. 2,816

Int. Cl. H01q *9/16, 21/12*

U.S. Cl. 343—815 **18 Claims**

A conducting shelf is situated between adjacent levels of dipoles fed in the same or nearly the same phase. The shelf is dimensioned to reduce the intensity of the coupling between adjacent dipoles while adding partial images which tend to cancel the remaining coupling and thereby improve the SWR

of each dipole over a relatively wide frequency range in the presence of other energized dipoles.

3,681,771

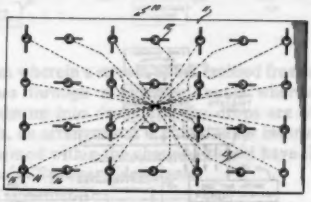
RETROFLECTOR DIPOLE ANTENNA ARRAY AND METHOD OF MAKING

Bernard L. Lewis, and James E. MacDowell, both of Brevard County, Fla., assignors to MacDowell Associates, Inc.

Filed March 23, 1970, Ser. No. 21,879

Int. Cl. H01q *21/00*

U.S. Cl. 343—817 **11 Claims**



A method of making an antenna array and an antenna array apparatus of a low-cost wide angle retroreflector is provided in which a printed circuit board has a plurality of antenna elements etched on one side thereof and a ground plane on the other separated by dielectric material of a predetermined thickness. Baluns are attached through the printed circuit board to each antenna element and to the ground plane and transmission lines of equal length connect spaced pairs of antenna elements utilizing the balun and matching the transmission line to the antenna element.

3,681,772

MODULATED ARM WIDTH SPIRAL ANTENNA

Paul G. Ingerson, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

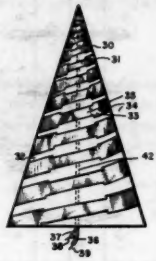
Filed Dec. 31, 1970, Ser. No. 103,116

Int. Cl. H01q *1/36*

U.S. Cl. 343—895 **11 Claims**

A multi-arm spiral antenna which allows unlimited broadband operation with dual senses of circular polarization. The

antenna comprises spiral arms having width variations which are log-periodically scaled to produce local reflection (stopband) regions along the arms. The position of the stopband regions is a function of the period and amplitude of



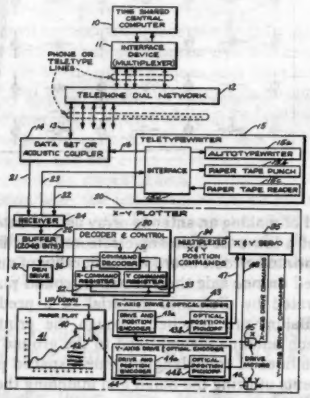
width variations. Arm currents are produced by excitation of the antenna. These currents are reflected by the stopband regions. The relative phase of the reflected currents is a function of the relative scaling of the arms.

3,681,773

GRAPHICAL PLOTTER

Lewis B. Russell, Orange, and William F. Kelly, Fullerton, both of Calif., assignors to Marine Sciences Corporation, Orange, Calif.

Filed April 21, 1969, Ser. No. 817,994
Int. Cl. G01d 9/40
U.S. Cl. 346—29 **18 Claims**



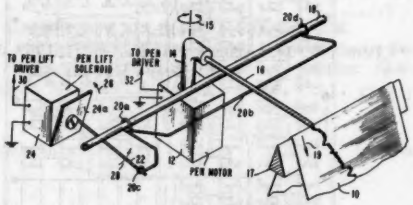
An improved two axis graphical plotter designed particularly for use in remote terminals of time shared computer systems is disclosed. It may be connected via any suitable digital transmission system and produce curves or printed matter under command of a digital computer. It employs a digital position servo system and operates by whole word readout of pen position. A novel optical position coding system is disclosed employing a pair of partially transparent code belts carrying a recording pen and an optical system employing the belt rollers as optical members. The computer time required to command many common pen movements is reduced by means of a novel slant mode of operation. Both the X and Y positioning systems employ digital servo loops with position data derived by the use of a minimum ambiguity code for accurate readout and converted to natural binary for comparison with incoming binary commands. The plotter includes a novel velocity profiler to produce near optimum pen movement.

3,681,774

TWO-VARIABLE STRIP CHART RECORDER

George J. Harris, Framingham, and William D. Richards, Medway, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Jan. 26, 1971, Ser. No. 109,904
Int. Cl. G01d 9/34
U.S. Cl. 346—62 **28 Claims**



A single-pen, two-variable recorder using a heat-sensitive paper and a heated pen. The paper moves at a fixed rate and ordinarily a first continuous signal is recorded. At periodic intervals, samples are taken of a second signal and the pen is used to scribe bars (in the form of a bar graph) with the length of each bar corresponding to the amplitude of a respective sample. While a bar is being recorded, the pen moves relatively fast. This results in lighter lines for the bar graph than for the continuous trace, and allows a fast sampling rate relative to the paper speed without having the bar graph obscure the graticule markings on the paper.

3,681,775

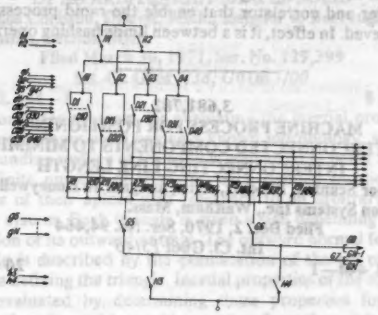
MULTI-HEAD SWITCHING ARRANGEMENT FOR NON-PERCUSSIVE PRINTER

Frederick Percival Mason, Burgess Hill, and Brian Michael Patience, Eastbourne, both of England, assignors to Creed & Company Limited, Sussex, England

Filed June 24, 1971, Ser. No. 156,217
Int. Cl. G11b 5/44
U.S. Cl. 346—74 M **3 Claims**

A multi-head switching arrangement in a non-percussive type printer which generates each character as a pattern of dots. The switching arrangement eliminates interference between heads by causing them to operate in a particular spa-

tial sequence. The arrangement is such as to reduce to a minimum the number of high-speed switching elements used,



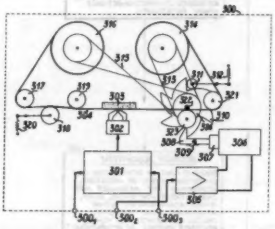
while ensuring the elimination of the residual field problems which causes interference between closely arranged adjacent heads.

3,681,776

KEYBOARD PRINTER FOR TYPEWRITING AND RECORDING CHARACTERS ON A MAGNETIC TAPE

Paul F. Gloess, 114 Ave. Andre Morizet, Boulogne-Billancourt, France

Filed Aug. 27, 1970, Ser. No. 67,508
Claims priority, application France, Sept. 1, 1969, 6929816
Int. Cl. G01d *15/12*
U.S. Cl. 346—74 M **4 Claims**



Keyboard printer for typewriting characters on paper and recording the same on a magnetic tape. The printer keyboard has capacitive motionless keys. The printer has a rotative equipment including a striking mechanism and a pulse generator and produces one start pulse per rotation cycle of the equipment, character pulses equally distributed in the cycle and one key pulse per cycle corresponding to the capacitive character key actuated by the operator. The code of the struck character is the number of character pulses between the start pulse and the key pulse. This number is counted in the binary code and is recorded on the magnetic tape, using the character pulses as synchronization pulses. Means are provided for actuating the advance mechanism of the tape by signals derived from the character pulses, which avoids the necessity of a motor in the tape recorder.

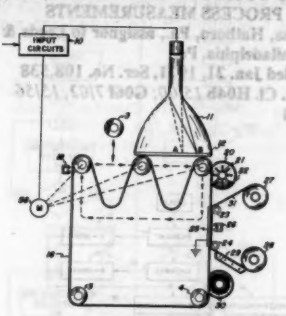
3,681,777

RECORDING APPARATUS

Edwin J. Smura, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 28, 1970, Ser. No. 67,811
Int. Cl. G03b *27/10*; G03g *15/00*; H04n *5/80*
U.S. Cl. 346—74 CR **22 Claims**

A high speed recording apparatus capable of recording signal intelligence from a cathode ray tube. Drive means are provided comprising a plurality of rollers to press discrete areas of a record web against the fiber optic face plate of the cathode ray tube in synchronism with beam sweep. This action



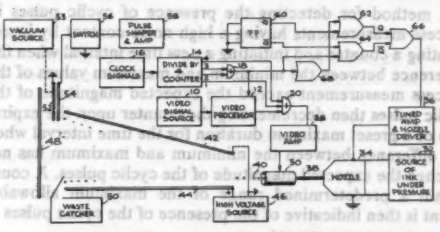
eliminates page incrementing lapse time while at the same time data is continuously recorded on the record web. The recorded data, at a processing station, may be transferred from the record web and a copy obtained.

3,681,778

PHASING OF INK DROP CHARGING

Robert I. Keur, Niles, Ill., assignor to A. B. Dick Company, Chicago, Ill.

Filed May 3, 1971, Ser. No. 139,409
Int. Cl. G01d *18/00*
U.S. Cl. 346—75 **5 Claims**



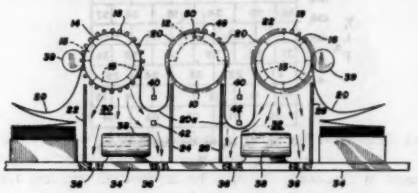
In a system wherein a stream of ink emitted from a vibrating nozzle passes through a charging tunnel wherein the ink stream breaks up into drops and the drops are charged by video signals, an arrangement is provided for insuring that the ink drops formed within the charging tunnel have the correct phase to receive a proper video signal.

3,681,779

APPARATUS FOR MAINTAINING UNIFORM PAPER TENSION IN A GRAPHICAL RECORDING DEVICE

Lawrence W. Darnell, Houston, Tex., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed July 31, 1970, Ser. No. 60,040
Int. Cl. G01d *15/30*
U.S. Cl. 346—136 **3 Claims**

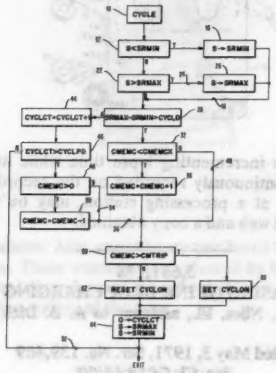


Paper tensioning means incorporated in a graphical recording device provides uniform tensioning across the entire width of fan or Z fold recording paper.

3,681,780
METHOD FOR AUTOMATICALLY DETECTING THE PRESENCE OF CYCLIC PULSES IN NOISE CORRUPTED PROCESS MEASUREMENTS

Charles W. Ross, Hatboro, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.

Filed Jan. 21, 1971, Ser. No. 108,538
Int. Cl. H04b 15/00; G06f 7/02, 15/56
U.S. Cl. 444—1 4 Claims

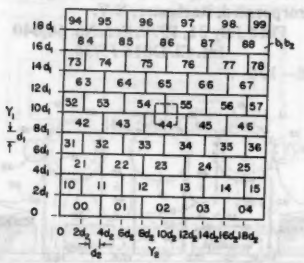


A method for detecting the presence of cyclic pulses in process measurements having a high noise content by incrementing a counter and initiating a new time interval when the difference between the minimum and maximum values of the process measurement exceed the expected magnitude of the cyclic pulses then decrementing the counter upon the expiration of a preset maximum duration for the time interval when the difference between the minimum and maximum has not reached the expected magnitude of the cyclic pulses. A count within a predetermined range of the maximum allowable count is then indicative of the presence of the cyclic pulses in the process measurement.

3,681,781
STORING AND RETRIEVAL METHOD

Kenneth E. Batcher, Stow, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Sept. 4, 1970, Ser. No. 69,831
Int. Cl. G06f 9/00, 15/34
U.S. Cl. 444—1 7 Claims

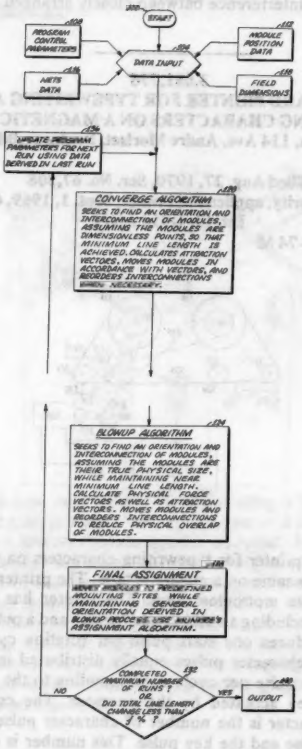


The invention relates to a technique for utilizing a general purpose computer controlled by an algorithm to store items from a multi-dimensional space in a store in such a way that retrieval of all items within a given tolerance of a search point can be effected rapidly. Basically, it is the use of unique algorithms in coordinating the function of the general purpose computer and correlator that enable the rapid processing to be achieved. In effect, it is a between limits hashing operation.

3,681,782
MACHINE PROCESS FOR POSITIONING INTERCONNECTED COMPONENTS TO MINIMIZE INTERCONNECTING LINE LENGTH

F. Taylor Scanlon, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 2, 1970, Ser. No. 94,464
Int. Cl. G06f 15/46
U.S. Cl. 444—1 20 Claims


START
PROGRAM CONTROL PARAMETERS
DATA INPUT
MODULE POSITION DATA
NETS DATA
FIELD DIMENSIONS
UPDATE PROGRAM PARAMETERS FOR NEXT RUN USING DATA DERIVED IN LAST RUN
CONVERGE ALGORITHM
SEEKS TO FIND AN ORIENTATION AND INTERCONNECTION OF MODULES, ASSUMING THE MODULES ARE DIMENSIONLESS POINTS, SO THAT A MINIMUM LINE LENGTH IS ACHIEVED. CALCULATES ATTRACTION VECTORS, MOVES MODULES IN ACCORDANCE WITH VECTORS, AND REORDERS INTERCONNECTIONS WHEN NECESSARY.
BLOWUP ALGORITHM
SEEKS TO FIND AN ORIENTATION AND INTERCONNECTION OF MODULES, ASSUMING THE MODULES ARE THEIR TRUE PHYSICAL SIZE, WHILE MAINTAINING NEAR MINIMUM LINE LENGTH. CALCULATE PHYSICAL FORCE VECTORS AS WELL AS ATTRACTION VECTORS. MOVES MODULES AND REORDERS INTERCONNECTIONS TO REDUCE PHYSICAL OVERLAP OF MODULES.
FINAL ASSIGNMENT
MOVES MODULES TO PREDEFINED MOUNTING SITES WHILE MAINTAINING GENERAL ORIENTATION DERIVED IN BLOWUP PROCESS. USE MUNKRES ASSIGNMENT ALGORITHM.
COMPLETED MAXIMUM NUMBER OF RUNS ? OR DID TOTAL LINE LENGTH CHANGE LESS THAN ε % ?
NO
YES
OUTPUT

A machine process is disclosed in which components of an interconnected network are simultaneously repositioned and their interconnections simultaneously reordered to minimize interconnecting line length. The repositioning and reordering process is performed first on nets having two components, then on nets having three components, etc., until all nets have been processed. The components are repositioned in accordance with a formula which allows large movement of interconnected components towards each other but prevents overshoot of such components. In this way, the components can be rapidly rearranged to achieve an efficient interconnecting pattern.

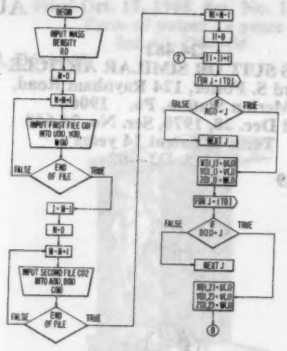
3,681,783

METHOD FOR EVALUATING INERTIAL PROPERTIES OF AN ARBITRARILY SHAPED SOLID

Kyriakos Christou, Detroit, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed March 30, 1971, Ser. No. 129,399
Int. Cl. G06f 7/38; G01m 1/00
U.S. Cl. 444—1 8 Claims

A computer program for evaluating the inertial properties of a homogenous solid having a known morphology, wherein the bounding surface of the solid is conceived as being formed by a finite number of triangles, each defined by the coordinates of their apices with reference to an arbitrary coordinate system. Each triangle is given a sign depending on the direction of its outward normal. The outward normal for each triangle is described by the permutation of the set of coordinates defining the triangle. Inertial properties of the solid are then evaluated by determining those properties for each tetrahedron formed by position vectors from the origin of the arbitrary coordinate system to the apices of each triangle. These properties are determined with reference to a different oblique coordinate system for each tetrahedron, such coordinate systems being defined by the respective position vectors forming each tetrahedron. The descriptions of the inertial properties with reference to the oblique coordinate systems are then transformed to descriptions in terms of the arbitrary coordinate system. The net properties of the solid with reference to the arbitrary coordinate system are then determined by algebraically summing the corresponding properties of each tetrahedron.

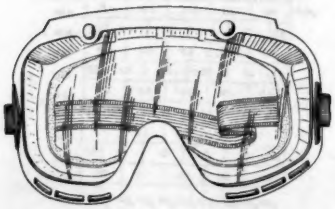


DESIGNS

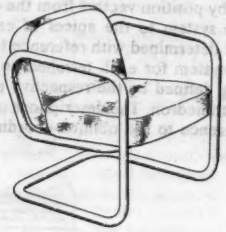
AUGUST 1, 1972

224,482
MAN'S SUIT OR SIMILAR ARTICLE
Howard S. Foster, 124 Raynham Road, Merion Station, Pa. 19066
Filed Dec. 28, 1970, Ser. No. 26,648
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—29

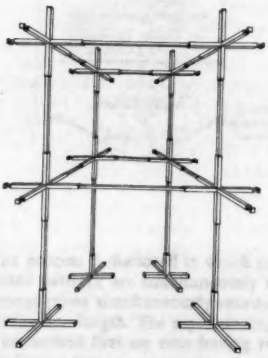
224,483
GOGGLES
Bernard Crestin-Billet, Morez-du-Jura, France
Filed Sept. 8, 1970, Ser. No. 24,866
Claims priority, application France June 9, 1970
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—234



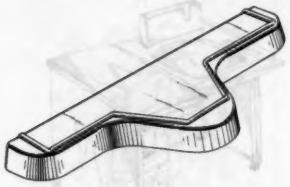
224,484
CHAIR
Jeffery R. Fear, 473 Brunswick Ave., Toronto 179, Ontario, Canada
Filed Dec. 7, 1970, Ser. No. 26,317
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—56



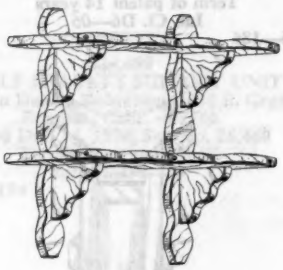
224,485
DISPLAY STAND
Robert L. Bliss, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah
Filed Oct. 30, 1970, Ser. No. 25,741
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—85



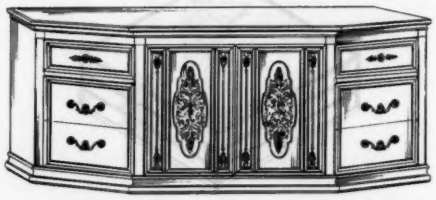
224,486
PROTECTIVE SHIELD FOR BATHTUB FAUCETS OR SIMILAR ARTICLE
Fred P. Miller, 316 W. 115th St., Kansas City, Mo. 64114
Filed Dec. 31, 1970, Ser. No. 26,715
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—86



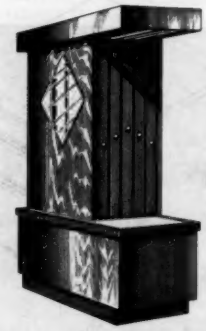
224,487
WALL SHELF UNIT OR SIMILAR ARTICLE
Franklin Delano Robertson, 1480 E. Grand, Pomona, Calif. 91766
Filed Dec. 14, 1970, Ser. No. 26,461
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—134



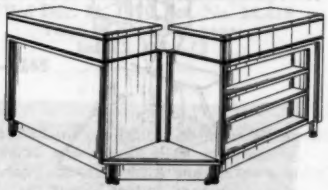
224,488
DRESSER OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Aug. 13, 1970, Ser. No. 24,469
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—148



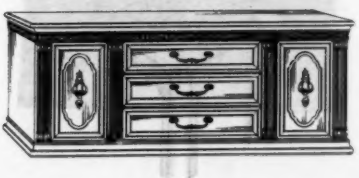
224,489
DISPLAY CABINET FOR EYEGLASS FRAMES OR THE LIKE
Milan Arent, 9 Iroquois St., Worcester, Mass. 01602
Filed Oct. 17, 1968, Ser. No. 14,039
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—168



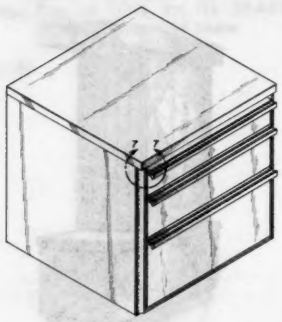
224,490
COMBINED SERVICE COUNTER AND CABINET UNIT
Daniel E. Richardson, Bel-Ridge, Mo., assignor to Shure Manufacturing Corporation, St. Louis, Mo.
Filed July 9, 1970, Ser. No. 23,876
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—159



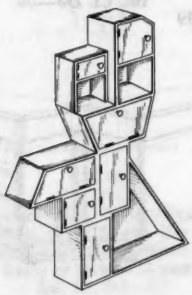
224,491
DRESSER OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Aug. 13, 1970, Ser. No. 24,470
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—164



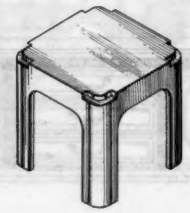
224,492
CABINET
Allen E. Inhelder, Palo Alto, Calif., assignor to J. W. Cross Co., Palo Alto, Calif.
Filed Sept. 8, 1970, Ser. No. 24,868
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—166



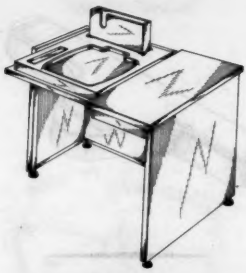
224,493
STORAGE CABINET
F. David Wolfe, 5425 Valles Ave., Riverdale, N.Y. 10471
Filed Sept. 10, 1970, Ser. No. 24,942
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—170



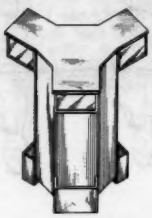
224,494
STACKABLE TABLE
Wilbur J. Kerman, St. Louis County, Mo., assignor to Cubicon Corporation, St. Louis, Mo.
Filed Dec. 14, 1970, Ser. No. 26,445
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



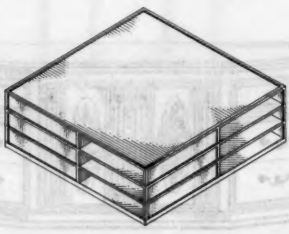
224,495
TYPEWRITER CONSOLE
Chester J. Abend, Camillus, James J. Bienkowski, East Syracuse, and Ellen V. B. Ludwick, Syracuse, N.Y., assignors to SCM Corporation, New York, N.Y.
Filed Oct. 28, 1970, Ser. No. 25,697
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—181



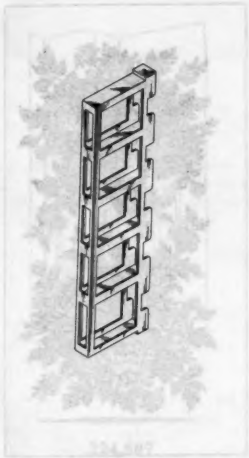
224,496
DISPLAY UNIT
Harry Kodinsky, % Kiads, Inc., Suite 4, Washington Plaza, Pittsburgh, Pa. 15219
Original design application June 10, 1969, Ser. No. 17,613. Divided and this application Apr. 1, 1970, Ser. No. 25,908
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—186



224,497
TAPE STORING CABINET OR THE LIKE
Robert J. Lauer, Canoga Park, Calif., assignor to Lahr/Simons Inc., Canoga Park, Calif.
Filed July 30, 1970, Ser. No. 24,230
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—189



224,498
DISPLAY HOLDER TAPE CARTRIDGES, CASSETTES OR THE LIKE
Jerry G. White, 203 Melody Lane, Terrell, Tex. 75160
Filed July 1, 1971, Ser. No. 159,095
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—189

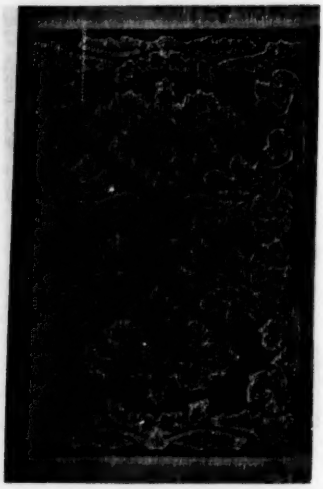


224,499
SHELF BRACKET SUPPORT UNIT
Franklin Delano Robertson, 1480 E. Grand, Pomona, Calif. 91766
Filed Dec. 14, 1970, Ser. No. 26,460
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—194

224,500
SHEET OR SIMILAR ARTICLE OF BED LINEN
Nancy Ann Scherer, Plainfield, N.J., assignor to Cannon Mills Company, Kannapolis, N.C.
Filed Feb. 16, 1971, Ser. No. 115,935
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—264

224,501
TOWEL OR SIMILAR ARTICLE
Connie C. Willoughby, New York, N.Y., assignor to Cannon Mills Company, Kannapolis, N.C.
Filed Dec. 11, 1970, Ser. No. 26,418
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—265

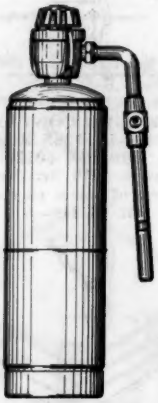
224,502
TOWEL OR SIMILAR ARTICLE
Connie C. Willoughby, New York, N.Y., assignor to Cannon Mills Company, Kannapolis, N.C.
Filed Dec. 11, 1970, Ser. No. 26,419
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—265



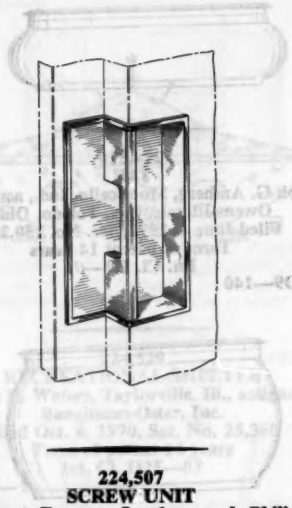
224,503
TOWEL OR SIMILAR ARTICLE
Nancy Ann Scherer, Plainfield, N.J., assignor to Cannon Mills Company, Kannapolis, N.C.
Filed Feb. 16, 1971, Ser. No. 115,923
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—265

224,504
TOWEL OR SIMILAR ARTICLE
John W. Rock, Wyckoff, N.J., assignor to Cannon Mills Company, Kannapolis, N.C.
Filed Feb. 16, 1971, Ser. No. 115,926
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—265

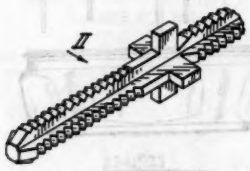
224,505
COMBINED TANK, PRESSURE REGULATOR AND TORCH
Frank Baranowski, Jr., 9 Pine St., Lynnfield Center, Mass. 01940
Filed Dec. 21, 1970, Ser. No. 26,603
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



224,506
LOCKER DOOR HANDLE
Joop M. Van Ryn, Whitby, Ontario, Canada, assignor to The Pedlar People Limited, Oshawa, Ontario, Canada
Filed Apr. 15, 1970, Ser. No. 22,436
Claims priority, application Canada Feb. 2, 1970
Term of patent 14 years
Int. Cl. D8—*06, 07*
U.S. Cl. D8—148



224,507
SCREW UNIT
Terence Robert Raynor, London, and Philip Sydney Smith, Bideford, England, assignors to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 21, 1971, Ser. No. 108,682
Claims priority, application Great Britain Aug. 8, 1970
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—267



224,508
DISPENSING CONTAINER
Arthur Wesley Newby, 1265 Schaumburg Road, Elgin, Ill. 60120
Filed Nov. 4, 1970, Ser. No. 25,830
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—9

224,509
BOTTLE
Henry H. Saenz, Pittsburgh, Pa., assignor to H. J. Heinz Company, Pittsburgh, Pa.
Filed June 28, 1971, Ser. No. 157,805
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—48

224,510
BOTTLE OR SIMILAR ARTICLE
Victor Koenigsberg, Franklin Square, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed June 16, 1971, Ser. No. 153,917
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—89

224,511
BOTTLE OR SIMILAR ARTICLE
Victor Koenigsberg, Franklin Square, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed June 16, 1971, Ser. No. 153,910
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—90

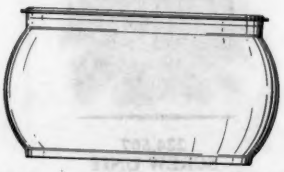
224,512
BOTTLE OR SIMILAR ARTICLE
Victor Koenigsberg, Franklin Square, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed June 16, 1971, Ser. No. 153,916
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—90

224,513
BOTTLE OR SIMILAR ARTICLE
Victor Koenigsberg, Franklin Square, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed June 16, 1971, Ser. No. 153,918
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—90

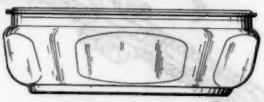
224,514
BOTTLE
Marshall J. Barrash, Atlanta, Ga., assignor to The Coca-Cola Company, New York, N.Y.
Filed Mar. 8, 1971, Ser. No. 122,298
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—100

224,515
JAR
Ralph G. Amberg, Monticello, Ind., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed June 4, 1971, Ser. No. 150,252
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—140

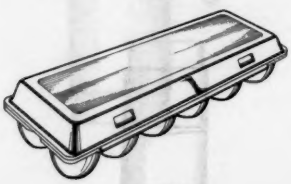
224,516
JAR
Ralph G. Amberg, Monticello, Ind., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed June 4, 1971, Ser. No. 150,253
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—140



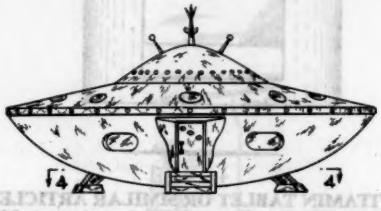
224,517
JAR
Ralph G. Amberg, Monticello, Ind., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed June 4, 1971, Ser. No. 150,254
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—154



224,518
EGG CARTON
David L. Pearl, Atlanta, and John G. Waller, College Park, Ga., and Beverly P. Head, Jr., Birmingham, Ala., assignors to W. R. Grace & Co., Duncan, S.C.
Continuation of abandoned design application Ser. No. 18,113, July 8, 1969. This application Sept. 1, 1970, Ser. No. 24,803
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—190

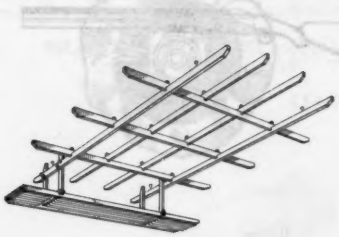


224,519
RESTAURANT BUILDING
Kenneth L. Swarthout, Brunswick, Ga.
(21010 St. Francis St., Farmington, Mich. 48024)
Filed Nov. 30, 1970, Ser. No. 24,605
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

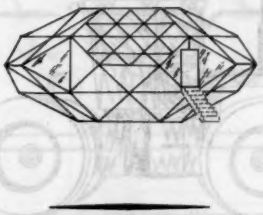


224,520
RECREATIONAL SHELTER
Charles H. Waters, Taylorville, Ill., assignor to Baughman-Oster, Inc.
Filed Oct. 6, 1970, Ser. No. 25,360
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

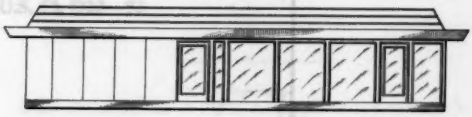
224,521
OVERHEAD ROOM DECORATION PANEL
John A. Zura, 6437 E. Sprague Road, Independence, Ohio 44131
Filed Apr. 1, 1971, Ser. No. 130,561
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



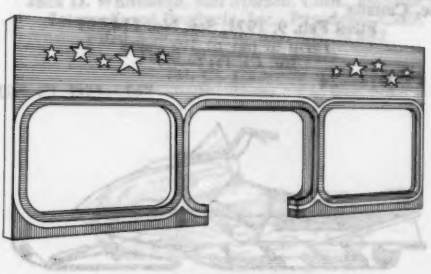
224,522
BUILDING OR SIMILAR ARTICLE
Frank P. Amie, Jr., 13 Grampian Road, Liverpool, N.Y. 13088
Filed May 12, 1971, Ser. No. 142,844
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



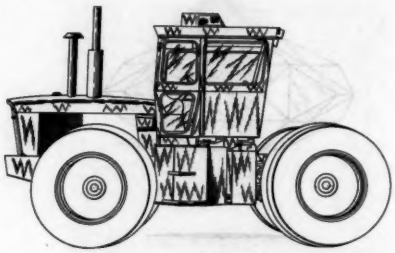
224,523
MODULAR RESTAURANT
Harry P. Calevas, 2800 E. Sunrise Blvd., Fort Lauderdale, Fla. 33304
Continuation-in-part of design application Ser. No. 24,856, Sept. 4, 1970. This application July 16, 1971, Ser. No. 163,554
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



224,524
SHOP FRONT
Bernard Bloom, Ladue, Mo., assignor to Edison Brothers Stores, Inc., St. Louis, Mo.
Filed Nov. 1, 1971, Ser. No. 194,773
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



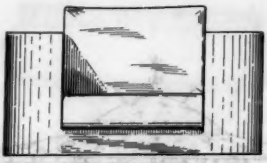
224,525
TRACTOR
Wendell Mason Van Syoc, Cedar Falls, and Lewis Kie Davis, Waterloo, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Oct. 26, 1970, Ser. No. 25,654
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3



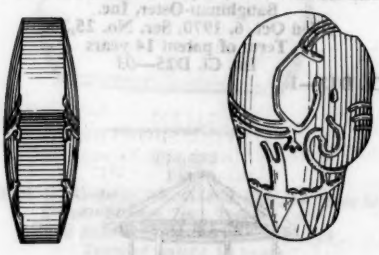
224,526
EMBLEM DISPLAY BAR FOR SNOWMOBILE
Glen Edward Marose, Des Moines, Iowa, assignor to Snowmobile, Ltd., Des Moines, Iowa
Filed Nov. 10, 1970, Ser. No. 25,915
Term of patent 14 years
Int. Cl. D12—*16*; D11—*05*
U.S. Cl. D14—6

224,527
SNOWMOBILE
Anthony D. Mackeen, Drummondville South, Quebec, Canada, assignor to Skiroule Limitee, Wickham, Quebec, Canada
Filed Feb. 9, 1971, Ser. No. 114,099
Term of patent 3½ years
Int. Cl. D12—*03*
U.S. Cl. D14—24

224,528
CHAIR
David M. Stravitz, 205 3rd Ave., New York, N.Y. 10003
Filed Feb. 22, 1971, Ser. No. 117,863
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—1



224,529
VITAMIN TABLET OR SIMILAR ARTICLE
Robert R. Wiethop, Evansville, Ind., assignor to Mead Johnson and Company, Evansville, Ind.
Filed Apr. 2, 1971, Ser. No. 130,866
Term of patent 14 years
Int. Cl. D28—*01*; D1—*02*
U.S. Cl. D16—3

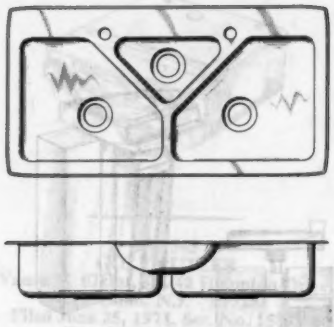


224,530
FIREARM
Kenji Murakami, 458 Hiyoshi-cho, Konoku-ku, Yokohama, Japan
Filed Nov. 2, 1970, Ser. No. 25,793
Claims priority, application Japan May 16, 1970
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—6

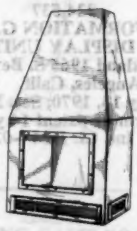
224,531
LIQUID SPRAYER
Alec Bradley Kirkbride, Harrow-on-the-Hill, England, assignor to Tudor Accessories Limited, London, England
Filed June 1, 1970, Ser. No. 23,253
Claims priority, application Great Britain Dec. 17, 1969
Term of patent 7 years
Int. Cl. D23—*01*
U.S. Cl. D23—18

224,532
ORNAMENTAL SHOWERHEAD
Victor B. Michels, 286 Savona Ave., Goleta, Calif. 93017
Filed Oct. 1, 1970, Ser. No. 25,302
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

224,533
SINK
Jon W. Hauser, St. Charles, Ill., assignor to Elkay Manufacturing Company, Broadview, Ill.
Filed Jan. 11, 1971, Ser. No. 105,762
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—62

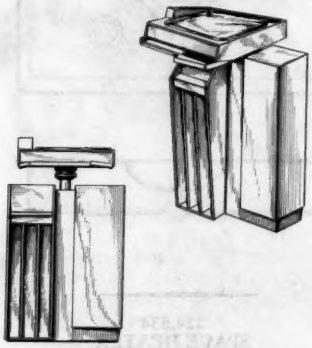


224,534
SPACE HEATER
Raymond R. Dupler, 744 Euclid Ave., Toledo, Ohio 43605
Filed Apr. 1, 1971, Ser. No. 130,565
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—93

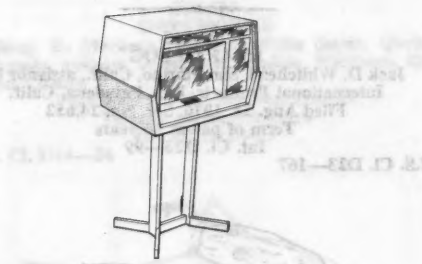


224,535
HEARTH LOG
Jack D. Whitehead, San Marino, Calif., assignor to International Products, Inc., Pasadena, Calif.
Filed Aug. 24, 1970, Ser. No. 24,652
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—167

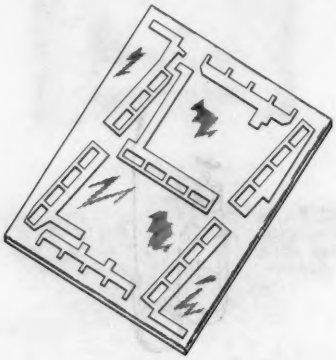
224,536
DENTAL UNIT
John M. Gardella, Matawan, N.J., Anthony Ciavattoni, Staten Island, N.Y., and Earl E. Hoyt, Northvale, N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed June 10, 1971, Ser. No. 151,997
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—1



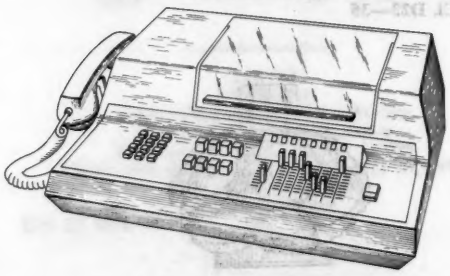
224,537
COMBINED INFORMATION GATHERING AND DISPLAY UNIT
Robert E. Strickland 1965 S. Beverly Glen Blvd., Los Angeles, Calif. 90025
Filed May 13, 1970, Ser. No. 22,967
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D25—1



224,538
MONOLITHIC LIGHT-EMITTING SEMICONDUCTOR DISPLAY CHIP
Enghua Lim, Los Gatos, Calif., assignor to Monsanto Company, St. Louis, Mo.
Filed Mar. 23, 1970, Ser. No. 22,018
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



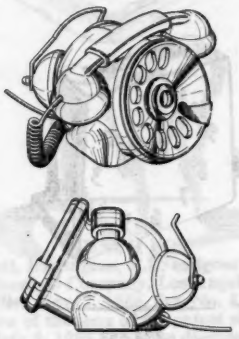
224,539
SALES TERMINAL
Vygantas A. Vaskunas, Nassau, N.Y., assignor to Interface Industries, Inc.
Filed Oct. 23, 1970, Ser. No. 25,626
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



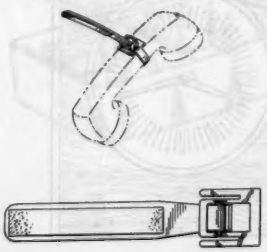
224,540
SWITCH
Bobby J. Garnett, Glendora, Calif., assignor to Hanson-Hawk, Inc. (a division of Orion Industries), Chatsworth, Calif.
Filed Jan. 13, 1971, Ser. No. 106,309
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13

224,541
CASING FOR A HAND MANIPULABLE TRANSDUCER
Robert E. Burridge, Montclair, N.J., assignor to Litton Business Systems, Inc., Orange, N.J.
Filed Oct. 28, 1969, Ser. No. 19,774
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D26—14

224,542
TELEPHONE SET OR SIMILAR ARTICLE
Bruno Todeschini, 25 Via Giovanni Pascoli Cernusco sul Naviglio, Milan, Italy
Filed June 29, 1971, Ser. No. 158,144
Claims priority, application Italy Mar. 24, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



224,543
TELEPHONE REST
Norbert Leopoldi, 4180 Marine Drive, Chicago, Ill. 60613
Filed June 4, 1971, Ser. No. 150,250
Term of patent 3½ years
Int. Cl. D14—*03*
U.S. Cl. D26—14

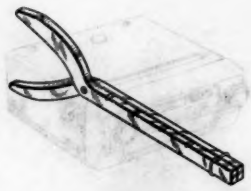


224,544
TAPE PLAYER FOR AUTOMOBILE
Koichi Nishimura, Tokyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed June 17, 1971, Ser. No. 154,265
Claims priority, application Japan Dec. 18, 1970
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

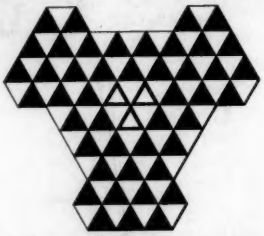
224,545
GOLF PUTTER
Vance V. Elkins, Jr., 42 Hampton Drive, Freehold, N.J. 07728
Filed June 25, 1971, Ser. No. 157,082
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

224,546
GUESSING GAME BOARD
Phyllis Frederick, Plainfield, and Dermot F. Sims, Piscatawa, N.J., and Charles R. Zimmerman, Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 26, 1970, Ser. No. 21,652
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5

224,547
HAND EXERCISER
George Thomas Lund, New York, N.Y., assignor of a fractional part interest to Maria Barbara Lund, New York, N.Y.
Filed Jan. 18, 1971, Ser. No. 26,727
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

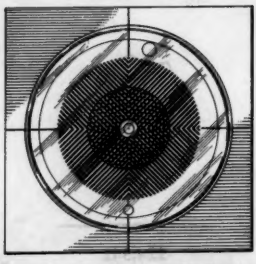


224,548
GAME BOARD
Forrest E. Tyler, R.R. 3, Greensburg, Ind. 47240
Filed Apr. 8, 1971, Ser. No. 132,623
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5

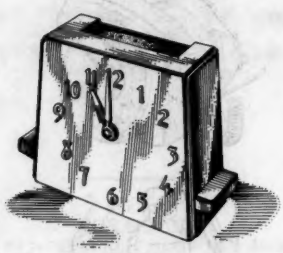


224,549
CLOWN PINWHEEL OR SIMILAR ARTICLE
Frederick H. Kroll, 72 Wood Hollow Lane, New Rochelle, N.Y. 10804
Filed Jan. 21, 1971, Ser. No. 108,677
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

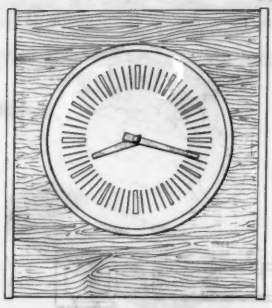
224,550
CLOCK
Julia B. Fainsilber and Alexandra N. Cot, both of 9 Cite de l'Alma, Paris 7, France
Filed Dec. 28, 1970, Ser. No. 26,679
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



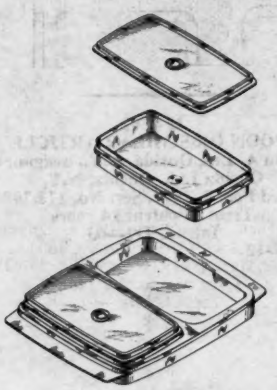
224,551
CLOCK
John L. Hancock, Villa Park, Ill., assignor to Mastercrafters Clock Corporation, Chicago, Ill.
Filed Mar. 23, 1971, Ser. No. 127,428
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



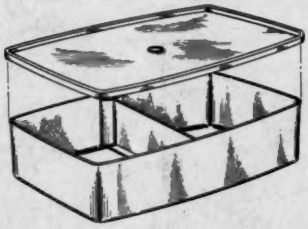
224,552
CLOCK
Walter B. Herbst, Evanston, and Ralph M. La Zar, Skokie, Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed July 6, 1971, Ser. No. 159,605
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



224,553
COMBINED SERVING CONTAINERS AND HOLDER THEREFOR
James B. Swett, Barrington, and Harold P. Ashton, Providence, R.I., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Aug. 24, 1970, Ser. No. 24,678
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—1



224,554
LUNCH BOX
James B. Swett, Barrington, R.I., assignor to Rexall Drug and Chemical Company, Los Angeles, Calif.
Filed Nov. 2, 1966, Ser. No. 4,512
The portion of the term of the patent subsequent to July 9, 1985, has been disclaimed
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1

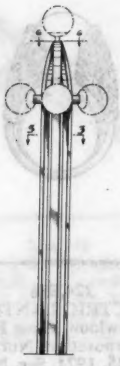


224,555
FINGER RING
Robert Willner, 2 Cherry Lane, Bristol, R.I. 02809
Filed Feb. 1, 1971, Ser. No. 111,796
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10

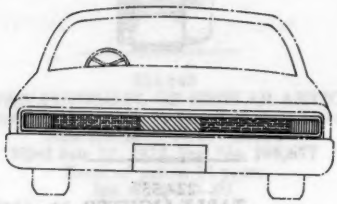
224,556
ELECTRIC LANTERN
Ming Kong Chan, Kowloon, Hong Kong, assignor to The Ashflash Corporation, Norwalk, Conn.
Filed Jan. 25, 1971, Ser. No. 109,741
Claims priority, application Great Britain Sept. 17, 1970
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24

224,557
TABLE LIGHTER
Dieter Rams, Konigstein, Taunus, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Mar. 25, 1970, Ser. No. 21,943
Claims priority, application Germany Oct. 13, 1969
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27

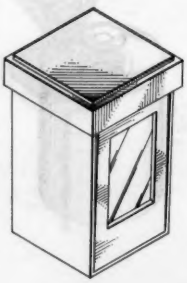
224,558
LIGHT STANDARD OR SIMILAR ARTICLE
Robert W. Selden, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Original design application Oct. 20, 1969, Ser. No. 19,616, now Patent No. 220,536, dated Apr. 20, 1971. Divided and this application Aug. 17, 1970, Ser. No. 24,514
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



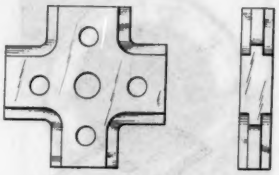
224,559
AUTOMOTIVE VEHICLE REAR END WARNING LIGHT PANEL
Jack R. Hendrickson, Bloomfield Hills, Mich. 48013
Continuation-in-part of design application Ser. No. 7,526, June 20, 1967. This application May 19, 1969, Ser. No. 17,200
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32



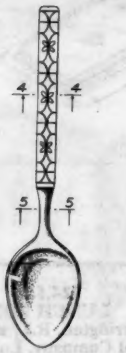
224,560
HYDRAULIC SCALE
Daniel E. McCue, Santa Barbara, Calif., assignor to Eldon Industries, Inc., Hawthorne, Calif.
Filed Jan. 22, 1971, Ser. No. 109,084
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—10



224,561
DIE MEMBER
Kenneth Scott Hays, Exton, and Walter Myers Werner, Downingtown, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 23, 1970, Ser. No. 26,730
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D54—4



224,562
SPOON OR SIMILAR ARTICLE
Melvin A. Lea, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Feb. 8, 1971, Ser. No. 113,798
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



224,563
SPOON OR SIMILAR ARTICLE
Melvin A. Lea, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Apr. 12, 1971, Ser. No. 133,481
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

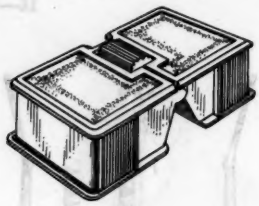
224,564
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
Filed Apr. 28, 1971, Ser. No. 138,384
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1

224,565
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
Filed Apr. 28, 1971, Ser. No. 138,385
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1

224,566
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
Filed Apr. 28, 1971, Ser. No. 138,386
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1

224,567
STRINGED MUSICAL INSTRUMENT
Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
Filed Apr. 28, 1971, Ser. No. 138,387
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1

224,568
BINOCULAR
Karl T. Baughman, Lake Forest, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Nov. 5, 1971, Ser. No. 196,260
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1

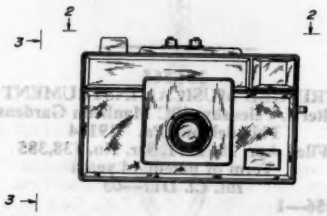


224,569
SECURITY CARD
John F. Regan, Anaheim, Calif., assignor to Eaton Corporation, Cleveland, Ohio
Filed Aug. 14, 1970, Ser. No. 24,494
Term of patent 14 years
Int. Cl. D19—*05*
U.S. Cl. D59—2

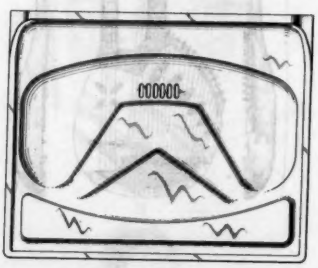
224,570
CALCULATING MACHINE
Chester J. Abend, Camillus, and James H. Frakes, Jr., Manlius, N.Y., assignors to SCM Corporation, New York, N.Y.
Filed Apr. 29, 1971, Ser. No. 141,813
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11

224,571
TYPEWRITER
Masakatsu Yotsukura, Narashino-shi, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed May 26, 1971, Ser. No. 147,283
Claims priority, application Japan Jan. 23, 1971
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11

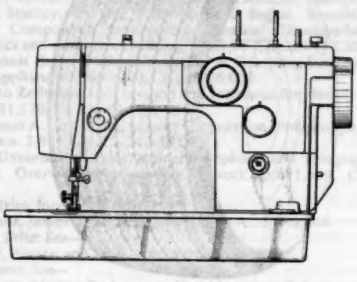
224,572
CAMERA
Ronald A. Emmerling, New City, N.Y., assignor to Keystone Division of Berkey Photo, Paramus, N.J.
Filed June 15, 1971, Ser. No. 153,488
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



224,573
WATER COOLER TOP
Jon W. Hauser, St. Charles, Ill., assignor to Elkay Manufacturing Company, Broadview, Ill.
Filed Oct. 1, 1970, Ser. No. 25,300
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D67—4

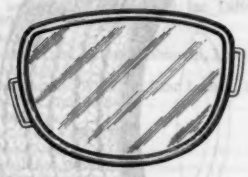


224,574
SEWING MACHINE
Yasuaki Yamamoto, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Nov. 17, 1970, Ser. No. 26,035
Claims priority, application Japan Nov. 6, 1970
Term of patent 14 years
The portion of the term of the patent subsequent to Mar. 16, 1985, has been disclaimed
Int. Cl. D15—*06*
U.S. Cl. D70—1

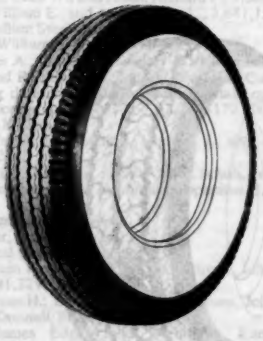


224,575
ILLUMINATED DOUBLE-FACED MAKE-UP MIRROR
Tadao Ishikawa, Saiitama, and Toshiaki Tokuda, Gunma, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, and Tokyo Sanyo Electric Co., Ltd., Gunma, Japan
Filed Aug. 20, 1970, Ser. No. 24,606
Claims priority, application Japan July 9, 1970
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10

224,576
HAND SUPPORTED REAR VIEW MIRROR
Jean-Paul Galarneau, 1438 Marie Victorin, St. Nicholes, Quebec, Canada
Filed Nov. 5, 1970, Ser. No. 26,425
Claims priority, application Canada Sept. 4, 1970
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D86—10

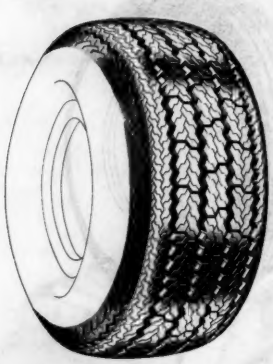


224,577
TIRE
Philip S. Hammond, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company
Continuation-in-part of design application Ser. No. 24,828, Sept. 3, 1970. This application June 21, 1971, Ser. No. 155,373
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



224,578
TIRE
Robert W. Floyd, Atwater, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Nov. 18, 1971, Ser. No. 200,265
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20

224,579
TIRE
Richard J. Skerl, Barberton, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Nov. 18, 1971, Ser. No. 200,264
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



224,580
TIRE
Richard J. Skerl, Barberton, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Nov. 18, 1971, Ser. No. 200,266
Term of patent 14 years
Int. Cl. D12—*15*
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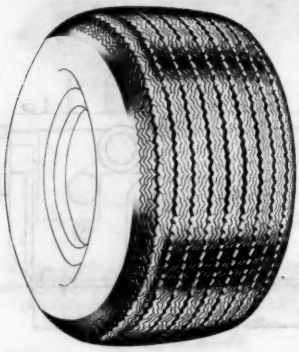

224,581
TIRE
Robert W. Floyd, Atwater, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Nov. 19, 1971, Ser. No. 200,662
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Int. Cl. D12—*15*
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Ballingall, Robert G.; and Sanders, Niles G. Lay-down highway delineator post. 3,680,448, Cl. 94-1.500.

Banholzer, Rolf: *See—*
Zeile, Karl; Schulz, Werner; Banholzer, Rolf; and Wick, Helmut, 3,681,500.

Banks, Vincent Pinder: *See—*
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Hindle, Thomas; and Banks, Vincent Pinder, 3,680,602.
Hindle, Thomas; and Banks, Vincent Pinder, 3,680,603.

Baranauckas, Charles F.: *See—*
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Barber, James R. Fertilizer distributor. 3,680,741, Cl. 222-177.000.

Barber-Colman Company: *See—*
Vaiden, I. Clifford, 3,680,382.

Barber-Greene Company: *See—*
Walker, Donald E., 3,680,933.

Barclay, John Lynn; Gasson Edward James; and Hadley, David James, to BP Chemicals Limited. Production of unsaturated aliphatic nitriles. 3,681,421, Cl. 260-465.300.

Barker, Joseph; and Hanson, Raymond, to USM Corporation. Apparatus for overall sole and heel unit cementing. 3,680,527, Cl. 118-7.000.

Baron, Heinz. Fibre fleece for medical or hygienical purposes. 3,680,561, Cl. 128-296.000.

Barr, Irwin R.; Hayman, Jack H., Jr.; and Wilkening, Harold A., to United States of America, Army, mesne. Inertia actuated cartridge retaining latches. 3,680,240, Cl. 42-1.00q.

Barriere, Alain, to Automobiles Peugeot and Regie Nationale des Usines Renault. Support device for a seat, in particular for a vehicle. 3,680,821, Cl. 248-371.000.

Barrilleaux, Robert G.: *See—*
Binkley, Frederick H., Jr.; Lanier, Eldred S., Jr.; and Barrilleaux, Robert G., 3,680,389.

Barron, Daniel. Variable depth sonar range production computer. 3,681,573, Cl. 235-88.000.

Bart, Hans U. Fuel pump. 3,680,980, Cl. 417-253.000.

Bartch, Donald Walter: *See—*
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Bartell, Charles: *See—*
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Barth, Hans-Dieter, to Chemiebau Dr. A. Zieren GmbH and Co., KG. Yields in the preparation of purified phthalic anhydride. 3,681,399, Cl. 260-346.400.

Bassani, Ermanno. Panel form with flexible cap holding access box in sealing relationship. 3,680,826, Cl. 249-91.

Bassist, Rudolph G., to Travis Mills Corporation. Apparatus for feeding filling threads to a warp knitting machine. 3,680,332, Cl. 66-84.000.

Batcher, Kenneth E., to Goodyear Aerospace Corporation. Storing and retrieval method. 3,681,781, Cl. 444-1.000.

Bateman, John H., to Ciba-Geigy Corporation. Process for crosslinking polymers containing mercaptan groups. 3,681,299, Cl. 260-79.000.

Bateman, John H., to Ciba-Geigy Corporation. Moisture curable resin compositions. 3,681,301, Cl. 260-79.000.

Bauer, Helmuth. Frames lackable between stationary supports. 3,680,260, Cl. 49-465.000.

Bauer, Victor John; and Safir, Sidney Robert, to American Cyanamid Company. Hypoglycemic agents. 3,681,498, Cl. 424-263.000.

Bausch & Lomb Incorporated: *See—*
Darnell, Lawrence W., 3,681,779.

Bayer, Erich, to Bosch, Robert, G.m.b.H. Carbon brush for use in electric motors. 3,681,635, Cl. 310-248.000.

Baytron Co., Inc.: *See—*
Kozul, Theodore L.; and Crandell, Paul A., 3,681,718.

Bazinet, Wilfred P., Jr.; and Salce, John E., to Noma-World Wide, Inc. High temperature termination for fiber optic bundle. 3,681,164, Cl. 156-294.

Beachner, George J., Jr.; Beachner, Howard A.; and Panzarella, Santo C., to S. H. & G. Company. Refuse container. 3,680,478, Cl. 100-229.00a.

Beachner, Howard A.: *See—*
Beachner, George J., Jr.; Beachner, Howard A.; and Panzarella, Santo C., 3,680,478.

Beall, George H.; and Martin, Francis W., to Corning Glass Works. Low expansion zinc petalite-beta quartz glass-ceramic articles. 3,681,097, Cl. 106-39.0dy.

Beall, George H., to Corning Glass Works. Transparent glass-ceramic articles comprising zinc spinel. 3,681,102, Cl. 106-39.0dv.

Bean, Stephen, to Autech Corporation. Digital ADF tuning indicator. 3,681,707, Cl. 331-64.000.

Beardsley, Earl A.; Bowditch, Hoel L.; and Prescott, Robert C., to Foxboro Company, The. Bumpless-transfer control system. 3,680,580, Cl. 137-86.000.
Bebenburg, Walter V.; and Thiele, Kurt, to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler. Indanyl or tetralyl amino substituted aminopyridines. 3,681,366, Cl. 260-295.50b.
Beck, Eugene F. Wheeled vehicle including hydraulic leveling system. 3,680,878, Cl. 280-6.00h.
Beck, James R., to Lilly, Eli, Company. N-Alkoxyalkylidenesulfonamide compounds. 3,681,406, Cl. 260-397.700.
Becke, Friedrich: *See*—
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Becker, Andrew D., to Itek Corporation. Method of forming a gelable dispersion. 3,681,254, Cl. 252-311.900.
Beckman Instruments, Inc.: *See*—
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Lu, Maoyeh; and Van Slooten, Nico J., 3,680,843.
Becton, Dickinson and Company: *See*—
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Bedenk, William T.; and Grabel, Lawrence, to Procter & Gamble Company, The. Apparatus and process of puffing. 3,680,473, Cl. 99-238.600.
Beebout, Howard E. Hay baling machine. 3,680,296, Cl. 56-16.400.
Beghelli, Benito; Vacanti, Francesco; and Guerani, Giampaolo, to Montecatini Edison S.p.A. Process for the preparation of pigmented polyolefin fibers. 3,681,280, Cl. 260-41.000.
Beilfuss, Richard W.: *See*—
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Bell, Albert H., III, to General Motors Corporation. Gas turbine engine block. 3,680,983, Cl. 417-409.000.
Bell, Oran M.; and Walker, Joseph J. Ankle hitch. 3,680,551, Cl. 128-84.00r.
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Long, Norwood G.; and May, Carl J., Jr., 3,681,533.
Bellows, Alfred H., to Polaroid Corporation. Compact rangefinding device. 3,680,946, Cl. 350-10.000.
Belmonte, James A.; and Williams, Thomas, to Corning Glass Works. Method of making electrical heating units. 3,680,207, Cl. 29-611.000.
Beloit Corporation: *See*—
Busker, Leroy H.; and Mosher, Robert J., 3,681,684.
Belue, James C.; and Jones, Weston C., to Owens-Corning Fiberglas Corporation. Drying chamber apparatus and method. 3,680,218, Cl. 34-10.000.
Bemis Company Inc.: *See*—
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Bendix Corporation, The: *See*—
Criswell, Daryl L.; and Sebold, Clarence V., 3,681,604.
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Benson, Albert; and Mausner, Marvin, to Witco Chemical Corporation. Retardation of formation of color-forming bodies in alkylaryl sulfonic acids. 3,681,443, Cl. 260-505.00p.
Berg Electronics, Inc.: *See*—
Friend, Lindsay C., 3,681,738.
Olsson, Billy E., 3,681,744.
Berge, Arthur. Program display device. 3,680,525, Cl. 116-135.000.
Berger, Alfred; Abel, Heinz; and Deflorin Alberto, to Ciba-Geigy AG. Process for finishing wool. 3,681,128, Cl. 117-141.000.
Berger, Frank M.: *See*—
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Bergerhoff, Gunter; Tihanyi, Bela; Falbe, Jurgen; and Weber, Jurgen, to Ruhrchemie Aktiengesellschaft. Phenyl-substituted phosphorous compound and process for its preparation. 3,681,435, Cl. 260-475.0sc.
Bergerhoff, Gunter; Tihanyi, Bela; Falbe, Jurgen; Weber, Jurgen; and Weisheit, Werner, to Ruhrchemie Aktiengesellschaft. Cyclic phosphorous acid esters and process. 3,681,477, Cl. 260-927.00r.
Bergles, Joseph L.; and Nelson, Marvin A. Sewage treatment plant and method of treating sewage. 3,681,236, Cl. 210-16.000.
Berglund, Neil C., to International Business Machines Corporation. Chain printer hammer control. 3,680,480, Cl. 101-93.00c.
Berkey Photo, Inc.: *See*—
Flieder, Robert A.; and Weisglass, Louis L., 3,681,613.
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Berry, Holland J.; Hardy, William C.; and Zadow, Dale W., to Sun Oil Company. Method and apparatus for igniting well heaters. 3,680,635, Cl. 166-300.000.
Berry, Holland J.; Hardy, William C.; and Zadow, Dale W., to Sun Oil Company. Method and apparatus for ignition and heating of earth formations. 3,680,636, Cl. 166-302.000.
Besedin, Alexandr Fedorovich: *See*—
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Betzing, Hans, to Nattermann, A., & Cie GmbH. Glycol phosphatides and the preparation thereof from cephalin. 3,681,412, Cl. 260-403.000.
Beyerlein, David G.; and Sweet, Douglas W., to General Motors Corporation. Electrical wheel slip limiting apparatus. 3,680,655, Cl. 180-54.00r.
Bickerstaff, Kenneth: *See*—
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Bickford, William J.: *See*—
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Bickhaus, James T.; and Carlson, Harold A., to ACF Industries, Incorporated. Staged carburetor. 3,680,846, Cl. 261-51.000.
Biebuyck, Lawrence F., to American Metal Climax, Inc. Bolt assembly. 3,680,901, Cl. 292-36.000.
Bigelow, Floyd E., Jr. Assembly of collapsed buildings for shipping. 3,680,273, Cl. 52-143.000.
Binkley, Frederick H., Jr.; Lanier, Eldred S., Jr.; and Barrilleaux, Robert G., to Texaco Inc. Sampling apparatus for waste disposal system. 3,680,389, Cl. 73-421.00b.
Biospherics Incorporated: *See*—
Topol, George J., 3,681,235.
Bird Machine Company: *See*—
Morin, Dennis R., 3,680,696.
Birtchet, Ralph D., to Schneider-Simpson, Inc. Roadway sloping attachment for asphalt paving machine. 3,680,451, Cl. 94-45.000.
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Bjorn, Thomas E., to Stewart-Warner Corporation. Apparatus and methods for analyzing unbalanced in rotatable bodies. 3,680,390, Cl. 73-457.000.
Blaakman, Frank L.: *See*—
McFadden, Robert N.; and Blaakman, Frank L., 3,680,754.
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Black Clawson Company, The: *See*—
Plough, Irving L., 3,680,215.
Black, Robert B. Autoclave. 3,681,008, Cl. 21-93.000.
Blackmer, David E. RMS circuits with bipolar logarithmic converter. 3,681,618, Cl. 307-229.000.
Blackmer, Dwight W.; and Bernier, Robert N., to Wanskuck Company. Reel. 3,680,809, Cl. 242-118.600.
Bladh, James C., to United States of America, Navy. Anti-swimmer buoy. 3,680,161, Cl. 9-8.00r.
Bland, Stephen William, to Imperial Chemical Industries Limited. Dyestuffs and photographic process. 3,681,345, Cl. 260-240.200.
Blatter, Johannes Reinier, to U.S. Philips Corporation. Cathode-system in which the cathode is supported by prestressed wires. 3,681,643, Cl. 313-337.000.
Bleha, William P., Jr.; and Scholl, Ronald F., to Hughes Aircraft Company. Storage tube comprising electro-luminescent phosphor and cadmium sulfide field sustained conduction target. 3,681,638, Cl. 313-68.00d.
Bleil, Carl E., to General Motors Corporation. Horizontal growth of crystal ribbons. 3,681,033, Cl. 23-273.0sp.
Blessinger, James E.: *See*—
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Bloch, Herman S.; Illingworth, George E.; and Lester, George W., to Universal Oil Products Company. Alkylaromatic sulfonate detergent process of preparation. 3,681,442, Cl. 260-505.00a.
Bloomer, Richard: *See*—
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Blum, Bernard Saul; and Kohn, Marvin Lee, to United Aircraft Corporation. Diffusion bonding method. 3,680,197, Cl. 29-487.000.
Blum, Josef, to Sorvall, Ivan, Inc. Cryogenic microtome apparatus. 3,680,420, Cl. 83-167.000.
Blunsdon, Ronald L., to Continental Can Company of Canada. Closure device for containers. 3,680,771, Cl. 229-65.000.
Blunt, Barry W., to Hercules Incorporated. Method of preparing polymerization catalyst. 3,681,256, Cl. 252-429.00a.
Boardman, Wilfred A.; and Willis, David Owen. Chamber pot. 3,680,151, Cl. 4-141.000.
Boecher, William R. Portable electric space heater. 3,681,567, Cl. 219-365.000.
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Bognaes, Ragnar; and Solberg, Olav, to Kvaerner Brug AS. Tanker for liquified and/or compressed gas. 3,680,323, Cl. 62-55.000.
Bognar, Lewis L., to Corning Glass Works. Forming vessels from green glass-ceramic sheets. 3,681,043, Cl. 65-33.000.
Bohm, Rainer. Electronic organ. 3,681,508, Cl. 84-1.030.
Bohne, Frederick G.; and Johnson, Mark O., to Conax Corporation. Method of making electrical penetrant structure. 3,680,208, Cl. 29-624.000.
Bonanno, Peter J.: *See—*
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Bonavent, Gerard; Huvey, Michel; and Peinado, Marcel, to Institut Francais du Petrole, des Carburants et Lubrifiants. Device for separating two liquids of different densities in a tank containing these two liquids. 3,680,729, Cl. 220-22.000.
Bonin, Yves; and Robin, Jean, to Rhone-Poulenc S.A. Storage-stable polyurethane repolymers containing malonitrile. 3,681,288, Cl. 260-77.snc.
Bonomo, Joseph A. Baby walking trainer. 3,680,889, Cl. 280-47.250.
Bonvicini, Gene; and Caserta, James. Rocking toy. 3,680,857, Cl. 272-52.000.
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Boris, Michel, to Societe Technique de Pulverisation. Dipper tube sprayer. 3,680,790, Cl. 239-353.000.
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Boudreau, Peter. Crime prevention system. 3,680,499, Cl. 109-32.000.
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Bowen, Duane C. Cantilevered camping vehicle bed construction. 3,680,908, Cl. 296-23.00r.
Bowerman, William R. Flushing system. 3,680,150, Cl. 4-57.00p.
Bowlby, James F. G. Single use film developer and film/developer package coupling means therefor. 3,680,464, Cl. 95-89.00r.
Bowlby, James F. G. Single use film developer and improved wiper means therefor. 3,680,465, Cl. 95-89.00r.
Bowlby, James F. G. Single use film developer and automatic, rupturable developer package therefor. 3,680,466, Cl. 95-90.000.
Bowling, Edward L., to Cornell-Dubilier Electric Corporation. Electrolytic capacitor with extended electrode for support in the container. 3,681,666, Cl. 317-230.000.
Boyd, Charles L.; and Roach, James D., to Halliburton Company. Magnetic pickup element adapter for flowmeters. 3,680,379, Cl. 73-231.00r.
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Branch, Geoffrey Hindle; Hall, James Edward; Bickerstaff, Kenneth; and Russell-Rayner, Albert Patrick, to Pilkington Brothers Limited. Conveying of glass sheets. 3,680,677, Cl. 198-20.000.
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Brehm, Herbert, to Siemens Aktiengesellschaft. Method to produce symbols composed of straight lines on the screen. 3,681,646, Cl. 315-18.000.
Brems, John H. Multiple step indexing and reversing drive mechanism. 3,680,399, Cl. 74-89.000.
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Brewster, Phillip W.; and Macdonald, John M., to Esso Research and Engineering Company. Fast cold quench oil for metals. 3,681,150, Cl. 148-29.000.
Bridal AG: *See—*
Margulies, Marcel Hidore, 3,681,178.
Brien, Andre N. Wrist watch with dial illuminating device. 3,681,587, Cl. 240-2.100.
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Briles, Franklin S. Self-gauging, interference fit rivet. 3,680,429, Cl. 85-37.000.
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Brooks, Kenneth, to Celanese Corporation. Traverse cam declutching device for yarn take-up apparatus. 3,680,800, Cl. 242-43.000.

Brooks,Ray G., to Product Promotions, Inc. Fish attracting device. 3,680,245, Cl. 43-17.000.

Brown & Root, Inc.: *See—*
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Brown, Clyde Owen, to United Aircraft Corporation. Diffraction coupled laser oscillator focusing system. 3,681,709, Cl. 331-94.500.

Brown, John D. Method of using plastic cast. 3,680,548, Cl. 128-69.000.

Brown, Lloyd H.; and Watson, David D., to Quaker Oats Company, The. Fiber glass laminates containing furfuryl resin binder. 3,681,286, Cl. 260-67.0fa.

Brown, Lloyd H.; Dunlop, Andrew P.; and Eftax, Daniel S. P., to Quaker Oats Company, The. Seliceous materials bound with resin containing organosilane coupling agent. 3,681,287, Cl. 260-67.0fa.

Brown, Lloyd H.; Dunlop, Andrew P.; and Eftax, Daniel S. P., to Quaker Oats Company, The. N,n-Bis((tri(substituted))silylalkylene-1,4- xylene-,-diimine. 3,681,420, Cl. 260-448.80r.

Brown, Martin J., to Western Electric Company, Incorporated. Method of delineating a selected region on a surface. 3,681,103, Cl. 117-8.500.

Brown, Robert E., to F&M Taco Shell Company. Taco shell cooking machine. 3,680,474, Cl. 99-353.000.

Brown, Robert G.; Sorrells, John R.; and Trent, Joseph E., to Bunn, B. H., Company. Pick-off head for sorting machine. 3,680,855, Cl. 271-41.000.

Brown, Verne R., to Transidyne General Corporation. Heat sensing probe. 3,681,734, Cl. 338-28.000.

Brucker, Henry J., to Suburban Metal Industries Limited. Decking and shoring beam. 3,680,711, Cl. 211-105.3.

Brundage, Robert Wesley, to Emerson Electric Co. Closed loop-open loop circuit for hydro-static transmissions. 3,680,313, Cl. 60-53.00r.

Brundage, Robert Wesley, to Emerson Electric Co.,. Hydraulic pump or motor. 3,680,989, Cl. 418-71.000.

Brunhuber, Charles. Garment shoulder saver attachment for wire garment hangers. 3,680,748, Cl. 223-98.000.

Brunie, Jean-Claude; Constantini, Michel; Crenne, Noel; and Jouffret, Michel, to Rhone-Poulenc S.A. Process for producing 6-hydroperoxhexanoic acid. 3,681,447, Cl. 260-533.00c.

Brunswick Corporation: *See—*
Sundberg, Bertil J.; and Luksch, Andreas, 3,680,183.

Bryan, Loren A.: *See—*
Joo, Louis A.; and Bryan, Loren A., 3,681,401.

Bryk, Petri Baldur; Honkasalo, Jorma Bruno; and Malmstrom, Rolf Einar, to Outokumpu Oy. Method of sulphatizing non-ferrous metals in finely ground iron or other ores. 3,681,046, Cl. 75-1.000.

Buchanan, David R.: *See—*
Erickson, Wayne K.; and Buchanan, David R., 3,680,334.

Buckler, Robert Thomas, to Miles Laboratories, Inc. N-(3-Phenyl-2h-tetrazole)-alkanoyl amines. 3,681,336, Cl. 260-247.50r.

Buckrucker, Mary J.: *See—*
BuckruckerLudwig E.; and Buckrucker, Mary J., 3,680,428.

BuckruckerLudwig E.; and Buckrucker, Mary J. Color coded musical notation. 3,680,428, Cl. 84-471.000.

Bucyrus-Erie Company: *See—*
Kraschnewski, Melvin W.; and Stoldt, Erwin F., 3,680,928.

Buffington, Albert G., Jr. Tangle free flag rigging. 3,680,526, Cl. 116-174.000.

Bujnowski, Raymond S.; and Oliver, Charles R., to General Motors Corporation. Pipe retainer. 3,680,818, Cl. 248-73.000.

Bulk, Eggert: *See—*
Emmerich, Heinz; and Bulk, Eggert, 3,680,608.

Bultfabriks Aktiebolaget: *See—*
Lefdegard, Sixten Harald, 3,680,195.

Bunk, Albert R.; Bennett, Bailey; Berry, David A.; Halbrook, Noah J.; Schuller, Walter H.; and Lawrence, Ray V., to United States of America, Agriculture. Mastic adhesive composition containing zinc salt of formaldehyde-modified rosin. 3,681,268, Cl. 260-2300.

Bunker-Ramo Corporation, The: *See—*
Treschitta, John Philip; and Perusse, Ralph Edmond, 3,681,719.

Bunn, B. H., Company: *See—*
Brown, Robert G.; Sorrells, John R.; and Trent, Joseph E., 3,680,855.

Buntz, Billie J.: *See—*
Mills, Loring E.; Marler, James V.; and Buntz, Billie J., 3,680,690.

Burch, Lyndon W. Snap action switch with free-floating roller and cam shaped actuator. 3,681,547, Cl. 200-68.000.

Burian, Theodor; and Krause, Bernhard, to International Standard Electric Corporation. Circuit arrangement for supervising the input information of a translator in telecommunication systems and particularly telephone systems. 3,681,534, Cl. 179-18.0et.

Burk, Snell G., to American Metal Climax, Inc. Belt conveyor unloading device. 3,680,681, Cl. 198-187.000.

Burkhard, Mahlon D.; and Peters, Richard W., to Industrial Research Products, Inc. Digital delay system for audio signal processing. 3,681,531, Cl. 179-1.00j.

Burkhard, Mahlon D.; and Peters, Richard W., to Industrial Research Products Inc. System for frequency modification of speech and other audio signals. 3,681,756, Cl. 340-172.5.

Burklin, Max: *See—*
Kirn, Manfred; Hahner, Reinhard; Stroezel, Reinhold; Hettich, Alfred; and Burklin, Max, 3,680,642.

Burks, Robert E., Jr., to Radiation Research Corporation. Polymerization of 2-pyrrolidone using azetidinone co-activators and carbon dioxide as activator. 3,681,296, Cl. 260-78.00p.

Burleigh, John E.: *See—*
Uraneck, Carl A.; and Burleigh, John E., 3,681,300.

Burlington, Donald A.: *See—*
Zagotta, Joseph L.; Wallace, R. Eugene; and Burlington, Donald A., 3,680,737.

Burness, Donald M.; and Looker, Jerome J., to Eastman Kodak Company. Bis isoxazole compounds and their quaternary salts. 3,681,372, Cl. 260-307.00h.

Burnett, Ernest G.: *See—*
Burnett, Ernest G.; and Cates, Charles S. (said Cates assor. to), 3,680,870.

Burnett, Ernest G.; and Cates, Charles S., said Cates assor. to Burnett, Ernest G. Weight attachment for golf clubs. 3,680,870, Cl. 273-194.00r.

Burns, Joseph, to Fairchild Camera and Instrument Corporation. Cathode-ray character-display tube. 3,681,645, Cl. 315-14.000 00.

Burns, Joseph P.; and Feltzin, Joseph, to Atlas Chemical Industries, Inc. Electrostatic developer containing polyester resin and a process of using same. 3,681,106, Cl. 117-17.500.

Burroughs Corporation: *See—*
Christou, Kyriakos, 3,681,783.
Houghton, Frank A.; and Yesowich, Thomas N., 3,680,853.

Burrous, Stanley E.: *See—*
Schwan, Thomas J.; Burrous, Stanley E.; and Butterfield, James L., 3,681,349.

Burtis, Winfield R., to Emhart Corporation. Pressure equalizing valve. 3,680,329, Cl. 62-275.000.

Buse, Frederic W., to Ingersoll-Rand Company. Centrifugal pump having leakage collection and draining means. 3,680,976, Cl. 415-110.000.

Bush, Clarence C., to United States of America, Army. Flexible cams. 3,680,406, Cl. 74-368.0fs.

Busker, Leroy H.; and Mosher, Robert J., to Beloit Corporation. Microwave moisture sensing system and method. 3,681,684, Cl. 324-58.50a.

Butcher, Howard J.; and Simpson, Edgar Alan, to Grace, W. R., & Co. Platelet silica, its production and uses. 3,681,017, Cl. 23-182.000.

Butler, Kenneth; and Hamanaka, Seiichi, to Pfizer Inc. Esters of-carboxybenzylpenicillin. 3,681,342, Cl. 260-239.100.

Butterfield, James L.: *See—*
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BWG Bergwerk-und Walzwerk-Maschinenbau GmbH: *See—*
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Cackley, George W.: *See—*
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Cae Industries Ltd.: *See—*
Tarry, Robert James; Kriellaars, Johannes C.; and Lord, Ronald D., 3,681,685.

Caffiero, Rodolphe: *See—*
Poignant, Pierre; Pillon, Daniel; and Caffiero, Rodolphe, 3,681,389.

Cafiero, Gasper, to Metra Electronics Corporation. Strip feeding and cutting mechanism. 3,681,172, Cl. 156-506.000.

Caiola, Robert J.; and Leatherman, Cleown A., to Dow Chemical Company, The. Heat sealing of polystyrene. 3,681,166, Cl. 156-308.000.

Cala, James S. Fishing signal. 3,680,244, Cl. 43-17.000.

Calfee, Wendell, to Westinghouse Electric Corporation. Phase sequence sensing circuit. 3,681,636, Cl. 317-47.000.

Calhoun, William L., Sr. Gin stand. 3,680,176, Cl. 19-63.000.

Caludon Engineering Company Limited: *See—*
Lancaster, James Kenneth; and Yates, David William, 3,680,439.

Cameron, Alistair A., to General Motors Corporation. Seal ring pick-up support. 3,680,191, Cl. 29-235.000.

Cameron, William M.; Mikiya, Toshio; and Matsumura, Mitsuma, to Nitto Kohki Company Limited. Fluid actuated tool having removable coil spring biasing means. 3,680,643, Cl. 173-133.000.

Campbell, Donald H.; and Liu, Chong-Tan, to Hooker Chemical Corporation. Metal plating on non-conductive substrates. 3,681,209, Cl. 204-30.000.

Campbell, James R., 10% to Armco Steel Corporation. Spherical bearing construction. 3,680,930, Cl. 308-72.000.

Campbell, Michael D.: *See—*
Johnston, Charles; and Campbell, Michael D., 3,681,504.

Camras, Marvin, to IIT Research Institute. Magnetic recording system using transducer with flux path. 3,681,526, Cl. 178-6.60a.

Can, Yilmaz, to Corning Glass Works. Electrical connector for refractory electrodes. 3,681,506, Cl. 13-6.000.

Cannon and Associates, Inc.: *See—*
Cannon, Robert E.; and Frailing, Le Roy H., 3,680,430.

Cannon, Emerson T., to Utah Research & Development Co., Inc. Physical therapy diagnostic device. 3,680,386, Cl. 73-379.00r.

Cannon, Robert E.; and Frailing, Le Roy H., to Cannon and Associates, Inc. Anchor bolt. 3,680,430, Cl. 85-79.000.

Canon Kabushiki Kaisha: *See—*
Hanada, Hiroshi, 3,681,067.

Canosa, Joseph Francis. Cooling vessel for beverages. 3,680,330, Cl. 62-457.000.

Capital Machine Company, Inc.: *See—*

Hale, Thomas F., 3,680,612.

Carboni, Rudolph A.; and Pikl, Josef, to Du Pont de Nemours, E. I., and Company. Preparation of p-aminobenzoyl chloride salts. 3,681,450, Cl. 260-544.00m.

Cardinal Instrument Corporation: *See—*
Moran, Robert J.; and Marsilia, Louis P., 3,680,385.

Carlsmith, Lawrence A.; and Hartz, Kenneth E., to Improved Machinery Inc. Aerating apparatus and method. 3,680,845, Cl. 261-37.000.

Carlson, Harold A.: *See—*
Bickhaus, James T.; and Carlson, Harold A., 3,680,846.

Carlson, Ronald H., to Hooker Chemical Corporation. Method for cleaning aluminum employing phosphine oxides. 3,681,140, Cl. 134-2.000.

Carmellini, Andrew E.; and James, Robert E., to U.S. Plywood-Champion Papers Inc. Method of making a three dimensional multi-layer panel. 3,681,165, Cl. 156-297.000.

Carmet Company: *See—*
Phillips, William H., Jr., 3,680,340.
Vale, Peter C.; Palazzola, Anthony; Grui, Nicolae; and Nixon, Raymond F., 3,680,267.

Carolina Enterprises, Inc.: *See—*
Lee, Norman C., 3,681,588.

Carrier Corporation: *See—*
Hansen, Raymond E.; and Huesgen, Eugene L., 3,680,979.

Carrier Corporation, mesne: *See—*
Pilarczyk, Karol, 3,680,973.

Carrier, Roger E. Monitoring humidity. 3,680,364, Cl. 73-73.000.

Carriere, Jean Paul: *See—*
Grundschober, Friedrich; Wychera, Erhard; and Carriere, Jean Paul, 3,680,689.

Carroll, Clifford C., to Deering Milliken Research Corporation. Process for color stabilizing elastomeric structures and products produced thereby. 3,681,129, Cl. 117-138.80d.

Carter, James M., Jr.: *See—*
Dozier, Willie L.; and Carter, James M., Jr., 3,681,541.

Carter-Wallace, Inc.: *See—*
Reisner, David B.; Ludwig, Bernard J.; and Berger, Frank M., 3,681,350.

Case, J. I., Company: *See—*
Blaauw, Andrew, 3,680,880.
Holmes, Terry M., 3,680,714.
Seaberg, David H., 3,680,723.
Symmank, William D., 3,680,722.

Caserta, James: *See—*
Bonvicini, Gene; and Caserta, James, 3,680,857.

Casey, Leonard R. Rotary kinetic device with coplaner tandem pistons. 3,680,444, Cl. 91-493.000.

Cassimatis, Peter N.: *See—*
Gould, Wallace E.; and Cassimatis, Peter N., 3,680,180.

Catalina, Doris M.: *See—*
Catalina, Edward L., 3,680,615.

Catalina, Edward L.; deceased (by Catalina, Doris M.; administratrix). Method of and apparatus for preparing fruits or vegetables. 3,680,615, Cl. 146-42.000.

Cate, Alan Clifford; and Gordon, Roy Charles, to American Cyanamid Company. Device for casting acrylic sheets. 3,680,991, Cl. 425-86.

Caterpillar Tractor Company: *See—*
Costa, Philip Joseph, 3,680,760.
Hnilicka, Eugene J.; and Cackley, George W., 3,680,929.
Hufeld, John L.; Larson, Donald J.; Marsden, Howard A.; Mueller, James P.; and Norick, William B., 3,680,588.
Olthoff, James A.; Smith, Roger M.; and Trittipoe, Jack H., 3,680,892.

Cates, Charles S.: *See—*
Burnett, Ernest G.; and Cates, Charles S., 3,680,870.

Catheron, Allan R., to Foxboro Company, The. Low noise primary device for fluid flow measurement by head meter (signal noise). 3,680,376, Cl. 73-211.000.

Caulkin, William Ernest, to W&T Avery Limited. Apparatus for serially entering information into a shift register. 3,681,574, Cl. 235-92.0sh.

Cawley, Martin Dean: *See—*
Ernst, Charles H.; and Cawley, Martin Dean, 3,680,944.

Cease, Richard G.; and Bickford, William J., to Raytheon Company. Multipath compensation system. 3,681,695, Cl. 325-305.000.

Celada, Juan, to Fierro Esponja, S.A. Method of charging electric arc steel-making furnace. 3,681,049, Cl. 75-12.000.

Celanese Corporation: *See—*
Brooks, Kenneth, 3,680,800.
Jamison, Saunders E., 3,681,472.
Jamison, Saunders Eliot, 3,681,488.
Juelke, Charles V.; and Trapasso, Louis E., 3,681,281.

Cellerini, Albert T.; Majcher, John; and Paton, Charles R., to Westinghouse Electric Corporation. Drawout switchgear. 3,681,545, Cl. 200-50.0aa.

Cellu-Craft, Inc.: *See—*
Warren, Barney, 3,680,768.

Centre National d'Etudes Spatiales: *See—*
Grundschober, Friedrich; and Arendt, John Harry, 3,681,284.

Cerferus AG: *See—*
Scheidweiler, Andreas; Muller, Peter; and Kuhn, Max, 3,681,603.

Cestone, Ralph M.; and Cestone, Vincent. Precision hydraulic lifting device. 3,680,837, Cl. 254-89.00h.

Cestone, Vincent: *See—*
Cestone, Ralph M.; and Cestone, Vincent, 3,680,837.

C.F. & Martin Company: *See—*
Morena, John; and Grauso, Robert N., 3,680,425.

Chakrabarti, Jiban Kumar; and Todd, Alec, to Lilly Industries Limited. Dihalo-s-triazine compounds. 3,681,332, Cl. 260-248.0cs.

Chamberlain, Alan Hawker. Reversible transmission with friction and positive clutches. 3,680,409, Cl. 74-792.000.

Chamberlain, Anna B.: *See—*
Deike, Robert F., 3,680,274.

Chamberlain, William H.: *See—*
Deike, Robert F., 3,680,274.

Chamecki, Samuel S., to Les Jouets Rationnels. Toy electric computer. 3,680,228, Cl. 35-30.000.

Chapman, Daniel W., to International Business Machines Corporation. Ferroelectric/photoconductor memory element. 3,681,765, Cl. 340-173.200.

Chapman, Daniel W.; and Mehta, Rajendra R., to International Business Machines Corporation. Ferroelectric/photoconductor storage device with an interface layer. 3,681,766, Cl. 340-173.200.

Chapman, Harvey W.; and Shook, Jackson A., to Evans Products Company. Freight bracing system. 3,680,491, Cl. 105-369.00b.

Chapman, Robert E.: *See—*
Mitten, Leonard A.; and Chapman, Robert E., 3,680,611.

Chapman, Robert F., to Atlantic Richfield Company. Coal processing. 3,680,217, Cl. 34-9.000.

Chase-Shawmut Company, The: *See—*
Kozacka, Frederick J., 3,681,731.

Chavant, Claude, to Chrysler France. Device for the injection of gases into the feed system of an internal combustion engine. 3,680,534, Cl. 123-119.00a.

Cheary, Walter Graham, to Lucas, Joseph, (Industries) Limited. Printed circuits and method of making same. 3,681,135, Cl. 117-212.000.

Chemed Corporation: *See—*
Holdt, Donald H., 3,680,531.

Chemical Construction Corporation: *See—*
Shah, Indravadan S., 3,681,020.

Chemiebau Dr. A. Zieren GmbH and Co., KG: *See—*
Barth, Hans-Dieter, 3,681,399.

Chemische Fabrik Kalk GmbH: *See—*
Witten-Annen, Hans Lewer; Dust, Hanspeter; and Thonnes, Martin, 3,681,246.

Chemtrust Industries Corporation: *See—*
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Chervenak, Michael C.: *See—*
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Chevron Research Company: *See—*
Egan, Clark J., 3,681,232.

Chiarenza, Melchior S. Artificial fishing lure. 3,680,249, Cl. 43-42.060.

Chicago Dryer Company: *See—*
Kamberg, Eduard F., 3,680,852.

Chigira, Junji, to Kanto Seiki Kabushiki Kaisha. On-off controlled oil temperature adjusting apparatus with a protective device. 3,680,325, Cl. 62-158.000.

Chiron, Bernard; and Duffau, Louis, to Societe Lignes Telegraphiques et Telephoniques. Tunable microminiaturized microwave filters. 3,681,716, Cl. 333-73.00s.

Chizinsky, George, to KEV Electronics Corporation. Method of making a field effect transistor. 3,681,220, Cl. 204-164.000.

Chow, Sui-Wu; Matzner, Markus; and McGrath, James E., to Union Carbide Corporation. Lactam polymerization with N-substituted nylon-1 initiator. 3,681,473, Cl. 260-857.0tw.

Christner, Harry V.: *See—*
Dacus, Herbert R.; and Christner, Harry V., 3,680,294.

Christofas, Alkis: *See—*
Dukert, Andrew A.; and Christofas, Alkis, 3,680,997.

Christou, Kyriakos, to Burroughs Corporation. Method for evaluating inertial properties of an arbitrarily shaped solid. 3,681,783, Cl. 444-1.000.

Chrysler France: *See—*
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Chung, Kheemoy. Three-phase ferro-resonant constant voltage transformer. 3,681,679, Cl. 323-6.000.

Ciba-Geigy AG: *See—*
Berger, Alfred; Abel, Heinz; and Deflorin Alberto, 3,681,128.
Somlo, Tibor; and Orban, Ivan, 3,681,403.

Ciba-Geigy Corporation: *See—*
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Bateman, John H., 3,681,301.
Dexter, Martin; Spivack, John Denon; and Steinberg, David Herbert, 3,681,364.
Dexter, Martin; Spivack, John Denon; and Steinberg, David Herbert, 3,681,431.
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Miller, Ralph; and Hoffmann, Jorg H., 3,681,416.
Petree, Harris E., 3,681,337.
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Saul, George A.; and Eckert, Robert J., Jr., 3,681,335.
Traber, Walter; and Weiss, Anton G., 3,681,249.
Zerginyi, Janos; and Habicht, Ernst, 3,681,502.

Ciesielski, Bernard A., to FMC Corporation. Belt penetration sensing apparatus. 3,680,686, Cl. 192-232.000.
Cimadevilla, Armand: *See—*
Roulet, Jean; and Cimadevilla, Armand, 3,680,275.
Cimber, Hugo S. Device for occlusion of an oviduct. 3,680,542, Cl. 128-1.00r.
Cimbollek, Gerhard: *See—*
Irmscher, Klaus; Cimbollek, Gerhard; Kraft, Hans-Gunther; and Harting, Jurgen, 3,681,409.
Cirami, Salvatore. Walking robot amusement ride. 3,680,487, Cl. 104-53.000.
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CKD Praha oborovy podnik: *See—*
Badal, Jiri, 3,681,677.
Cla-Val Co.: *See—*
Ensign, Harold W., 3,680,606.
Clair, Gilbert D., to Val-Jac Manufacturing and Supply Company. Automatic sequential operated valve. 3,680,583, Cl. 137-106.000.
Clampitt, Bert H.: *See—*
Anspon, Harry D.; Clampitt, Bert H.; and Gilbert, Ronald E., 3,681,313.
Clark, Lowell; and Elgan, Douglas L., to Motorola, Inc. Process for fabricating small geometry high frequency semiconductor device. 3,681,153, Cl. 148-187.000.
Clark, Roger. Fuel spray system for internal combustion engines. 3,680,536, Cl. 123-139.0bg.
Clark, Wallace; and Teeters, James L. Watercraft drive mechanism. 3,680,522, Cl. 115-23.000.
Clarke and Smith Manufacturing Company Limited: *See—*
Rayner, Wilfred H. G., 3,680,812.
Clusener, Gerhard R. Dilatometer. 3,680,357, Cl. 73-16.000.
Cofek, Henry Robert; and Farrace, Frederick Thomas, to Iris Corporation, mesne. Apparatus and method for shell inspection. 3,680,966, Cl. 356-241.000.
Cogar Corporation: *See—*
Allen, Charles A.; Andersen, Stanley R.; Kinkade, Robert G.; Kwei, Thomas; and Robinson, Richard H., 3,681,757.
Kelly, William J.; and Reynolds, Warren A., 3,681,699.
Meade, Robert M.; and Robinson, Richard H., 3,681,763.
Cogliano, Joseph A. Collapsible bicycle. 3,680,879, Cl. 280-7.160.
Coin, Rene Georges; Croo, Robert-Justin; and Meuret, Pierre Henri, to British Petroleum Company Limited, The. Level detector. 3,681,546, Cl. 200-81.00r.
Cole, Donald Q.: *See—*
Nino, Fernando J.; and Cole, Donald Q., 3,680,348.
Cole, John Wayne: *See—*
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Coleman Company, Inc., The: *See—*
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Collins Radio Company: *See—*
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Collins, Robert K., Jr.: *See—*
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Collura, Peter C.; and Pintsak, William P., to Container Corporation of America. Reducible flip top box. 3,680,766, Cl. 229-51.000.
Colton, Russell F.: *See—*
Joy, Robert D.; and Colton, Russell F., 3,680,375.
Colt's Inc.: *See—*
Zaid, Melvin; Soifer, Martin T.; Darigo, Julius; and Robinson, Russell S., 3,680,485.
Columbia Broadcasting System, Inc.: *See—*
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Delu, Ion, 3,680,424.
Conant, Theodore A., Jr., to Litton Systems, Inc. Low power memory system. 3,681,764, Cl. 340-173.00r.
Conax Corporation: *See—*
Bohne, Frederick G.; and Johnson, Mark O., 3,680,208.
Conduco A.G.: *See—*
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Connally, Douglas R., to A.P.C. Industries, Inc. Conductor identification via counting means at a remote position. 3,681,686, Cl. 324-66.000.
Conner, Joseph R.; Shovlin, Thomas F.; and Helm, Jack D., to Bemis Company Inc. Band saw apparatus. 3,680,421, Cl. 83-201.140.
Conroy, James F.: *See—*
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Constantini, Michel: *See—*
Brunie, Jean-Claude; Constantini, Michel; Crenne, Noel; and Jouffret, Michel, 3,681,447.
Container Corporation of America: *See—*
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De Lorenzo, Richard G.; and Luff, Donald G., 3,680,767.
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Continental Can Company of Canada: *See—*
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Continental Oil Company: *See—*
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Ferree, Carman M.; and Miller, Douglas F., 3,681,749.
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Cooper, Joseph Ernest: *See—*
Baig, Reginald; Cooper, Joseph Ernest; and Meek, Louis, 3,680,508.
Cooper, Robin D. G.; and Fukuda, David S., to Lilly, Eli, and Company. Thiazoline azetidinones. 3,681,380, Cl. 260-306.700.
Cooper, Stuart B., to Honeywell Information Systems Inc. Communications apparatus for transmitting and receiving synchronous and asynchronous data. 3,681,529, Cl. 178-70.00r.
Copeland Corporation,mesne: *See—*
King, Robert W., 3,680,988.
Coran, Aubert Y.; Kerwood, Joseph E.; and Trivette, Chester D., Jr., to Monsanto Company. 1,4-Bis-(cycloalkylthio)piperazines. 3,681,356, Cl. 260-268.00s.
Cordis Corporation: *See—*
Terry, Reese S., Jr., 3,681,674.
Cornell Aeronautical Laboratory, Inc.: *See—*
Reinnagel, Richard E., 3,680,743.
Cornell-Dubilier Electric Corporation: *See—*
Bowling, Edward L., 3,681,666.
Corning Glass Works: *See—*
Beall, George H.; and Martin, Francis W., 3,681,097.
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Belmonte, James A.; and Williams, Thomas, 3,680,207.
Bognar, Lewis L., 3,681,043.
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Dumbaugh, William H., Jr.; Flannery, James E.; and Hares, George B., 3,681,098.
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Rock, William A.; and Valleroy, Gustave J., 3,681,084.
Correard, Daniel; Friess, Emmanuel; Salvi, Antoine; and Tregoures, Roger, to Commissariat a l'Energie Atomique. Differential frequency meter. 3,681,689, Cl. 324-79.00r.
Costa, Philip Joseph, to Caterpillar Tractor Company. Control system for inertia welding machines. 3,680,760, Cl. 228-2.000.
Costain, William B.: *See—*
Amelotte, Joseph A.; and Costain, William B., 3,680,836.
Cote, Delmer J. Dry wall tape folder that folds tape for corners when taping sheet rock. 3,681,175, Cl. 156-576.000.
Courtaulds Limited: *See—*
Betts, Max William; and Robinson, Frank, 3,680,333.
Torrance, Brian J. D., 3,681,004.
Wilding, Malcolm D., 3,681,120.
Couser, Chester F. Implement hinge. 3,680,172, Cl. 16-163.000.
Coutellier, Chislain: *See—*
Esteve-Subirana, Antonio; and Coutellier, Chislain, 3,681,503.
Covey, Gordon W. Mill. 3,680,797, Cl. 241-73.000.
Cox, Conrad M.; and Fischer, Robert B., to International Business Machines Corporation. Method and apparatus for testing gap surface finish and winding characteristics of a magnetic head subassembly. 3,681,682, Cl. 324-34.00r.
Cox, Duane M., to Thiokol Chemical Corporation. Hot gas valve. 3,680,788, Cl. 239-265.230.
Cox, Michael C. L., to Gillette Company, The. Urine collection device. 3,680,543, Cl. 128-2.00f.
Cox, Phillip W.: *See—*
Smith, William F.; Mitchell, John H.; Edwards, William M.; and Cox, Phillip W., 3,680,975.
Cox, Raymond E.; and Ehrlich, Robert M., to General Foods Corporation. Process for making jams and jellies. 3,681,086, Cl. 99-129.000.
Coyne, Roy J.: *See—*
Lombardi, Louis J.; Coyne, Roy J.; and Green, Charles E., 3,681,474.
CPC International Inc.: *See—*
Suekane, Mikio; and Satake, Chikako, 3,681,195.
Crabbe, Pierre; and Velarde, Esperanza, to Syntex Corporation. Process for preparing 17a-hydroxy-20-keto and 17a, 21-dihydroxy-20-keto pregnanes and derivatives and intermediates thereof. 3,681,410, Cl. 260-397.300.

Crabbe, Pierre; and Fried, John H. Preparation of 17 alpha propadienyl steroids. 3,681,411, Cl. 260-397.400.
Crandell, Paul A.: *See—*
Kozul, Theodore L.; and Crandell, Paul A., 3,681,718.
Cravens, Mark C., Jr. Milling machine draw bar device. 3,680,437, Cl. 90-11.00d.
Creators Limited: *See—*
Kent, Cecil, 3,681,180.
Creed & Company Limited: *See—*
Mason, Frederick Percival; and Patience, Brian Michael, 3,681,775.
Creighton, David M.: *See—*
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Crenne, Noel: *See—*
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Crews, Samuel T., Jr.: *See—*
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Criswell, Daryl L.; and Sebold, Clarence V., to Bendix Corporation, The. Portable X-ray generating machine. 3,681,604, Cl. 250-93.000.
Critchley, Derek; Dawber, Frank; and Grainger, Kenneth Frederick, to Pilkington Brothers Limited. Sampling of gaseous atmospheres. 3,680,388, Cl. 73-421.50r.
Crompton & Knowles Corporation: *See—*
Scott, Perry E., 3,680,182.
Cronig, Alvin, to Itek Corporation. Gel photo processing apparatus. 3,680,462, Cl. 95-89.00r.
Croo, Robert-Justin: *See—*
Coin, Rene Georges; Croo, Robert-Justin; and Meuret, Pierre Henri, 3,681,546.
Crow, Thomas G.: *See—*
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Crucible Inc.: *See—*
Dulis, Edward J.; Kasak, August; and Stasko, William, 3,681,058.
Cuddihy, Richard G. Vehicle self tracking system. 3,681,752, Cl. 340-24.000.
Cullison, David A.: *See—*
Hackett, Homer L.; Cullison, David A.; and Peveto, Edmond A., 3,681,014.
Cummins Engine Company, Inc.: *See—*
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Cupit, George Moffat. Toilet pan connector. 3,680,896, Cl. 285-177.000.
Custer, Peter. Apparatus for controlling contrast during reproduction of photographic images. 3,680,956, Cl. 355-71.000.
Custom Resins, Inc., mesne: *See—*
Galiano, Francis R.; Thackaberry, Samuel P.; Smith, Wayne E.; and Anderson, Raymond P., 3,681,216.
Cutler-Hammer, Inc.: *See—*
Allison, Arthur F.; Greening, Donald J.; and Mollgaard, Anton N., 3,681,624.
Dacus, Herbert R.; and Christner, Harry V. Mower attachment. 3,680,294, Cl. 56-255.000.
Dahlin, Erik B., to Measurex Corporation. Basis weight gauge standardizing system. 3,681,595, Cl. 250-83.00c.
Dahlin, William R.: *See—*
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Dahlquist, Carl A., to Minnesota Mining and Manufacturing Company. Pressure-sensitive adhesive tape. 3,681,190, Cl. 206-59.00c.
Daicel Ltd.: *See—*
Moriyama, Kizyu; and Moriwaki, Takeshi, 3,681,310.
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Reilly, Joseph F., Jr.; Daigle, Joseph D.; and Hubenak, Daniel W., Jr., 3,681,123.
Daily, William C.; and Welzel, Fred H., to Jones, R. A., & Co., Inc. Method and apparatus for feeding flat blanks to make boxes. 3,680,854, Cl. 271-32.000.
Daimler-Benz Aktiengesellschaft: *See—*
Muller-Berner, Alfred Harmann, 3,680,370.
Naumann, Willy R.; Albrecht, Wilhelm; and Wieland, Egon, 3,680,405.
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Dainipon Pharmaceutical Co., Ltd.: *See—*
Kaneko, Hidehiko; Yamamoto, Yuzuru; and Kon, Tatsuya, 3,681,408.
D'Alelio, Gaetano Francis. Synthesis of polybenzothiazolines and polybenzothiazoles by reacting a dialdehyde with an aromatic bismercaptoamine. 3,681,297, Cl. 260-72.500.
D'Alessio, Joseph R., to Federal Paper Board Company, Inc. Display carton. 3,680,687, Cl. 206-45.140.
Dalgaard, Svend B. Method and system to monitor pH values in water. 3,681,025, Cl. 23-230.00r.
Dalyai, Stephen Attila, to Bell Telephone Laboratories, Incorporated. Latching pulse generator including a monostable multivibrator. 3,681,622, Cl. 307-273.000.
D'Amico, John Joseph, to Monsanto Company. Sulfenamides of carbodithioic acid containing azabicyclononame. 3,681,303, Cl. 260-79.50b.
Danfoss A/S: *See—*
Huelle, Zbigniew R., 3,680,326.
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Daniels, Curtice F.; and Daniels, Curtice F., Jr. Variable thickness control for veneer lathe. 3,680,613, Cl. 144-209.00r.
Daniels, Curtice F., Jr.: *See—*
Daniels, Curtice F.; and Daniels, Curtice F., Jr., 3,680,613.
Daniels, Francis James, Jr. Measuring dispenser. 3,680,744, Cl. 222-437.000.
Danielsson, Gunnar; and Winquist, Knut Ludvig, to Aktiebolaget Atomenergi. Incinerator. 3,680,503, Cl. 110-13.000.
Dann, Bert H., to International Video Corporation. High speed PIM demodulator. 3,681,702, Cl. 329-102.000.
Dantro, Horace F., to N L Industries, Inc. Photoconductive titanium dioxide composition. 3,681,133, Cl. 117-201.000.
Dardoufas, Kimon Constantine: *See—*
Obetz, James Edgar; and Dardoufas, Kimon Constantine, 3,681,244.
Darigo, Julius: *See—*
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Darnell, Lawrence W., to Bausch & Lomb Incorporated. Apparatus for maintaining uniform paper tension in a graphical recording device. 3,681,779, Cl. 346-136.000.
Dart Industries Inc.: *See—*
Swett, James B., 3,680,828.
Davidson, John R., to Motorola, Inc. Shared volume and tone control system. 3,681,704, Cl. 330-124.000.
Davies, Gareth Morse, to Imperial Chemical Industries Limited. Antibacterial compositions. 3,681,493, Cl. 424-185.000.
Davies, Guy Edward, to Plessey Company, Limited, The. Fluidic control systems. 3,680,578, Cl. 137-81.500.
Davino, Salvatore. Relief illusion television viewing apparatus. 3,680,949, Cl. 350-144. 000.
Davis, Donald A. Drawer mounted expansible table. 3,680,942, Cl. 312-317.000.
Davis, Grover M. Game board with magnetic game pieces. 3,680,865, Cl. 273-134.0ae.
Davis, John R., Jr.: *See—*
Nathanson, Harvey C.; and Davis, John R., Jr., 3,681,134.
Davis, John S., to United States of America, Navy. Remote-controlled launch system for missiles. 3,680,749, Cl. 244-3.140.
Davis, William C. Sprinkler head earth and grass cutter mechanism. 3,680,639, Cl. 172-15.000.
Davy and United Engineering Company: *See—*
Senior, David Clive, 3,680,993.
Dawber, Frank: *See—*
Critchley, Derek; Dawber, Frank; and Grainger, Kenneth Frederick, 3,680,388.
Dawson, Elmer C. Garden tractor. 3,680,640, Cl. 172-258.000.
Dayco Corporation: *See—*
Jacob, Richard J., 3,680,868.
Spivy, Paul L., 3,680,925.
De Corso, Serafino M., to Westinghouse Electric Corporation. Nonconsumable electrode vacuum arc furnaces for steel, zirconium, titanium and other metals and processes for working said metals. 3,680,163, Cl. 13-9.000.
De Lorenzo, Richard G.; and Luff, Donald G., to Container Corporation of America. Hooded carton with reclosure lock. 3,680,767, Cl. 229-51.0tc.
De Meulenaere, Robert O. Settable automatic call repertory device with control of dial, pushbutton and data memories. 3,681,535, Cl. 179-90.00b.
de Stevens, George: *See—*
Rodriguez, Herman Robert; and de Stevens, George, 3,681,340.
De Witt, Walter G., III: *See—*
Hurwitz, Marvin J.; and De Witt, Walter G., III, 3,681,298.
Deal, Samuel Broughton; and Bartch, Donald Walter, to RCA Corporation. Electron tube having tamper-detectable label attached thereto. 3,680,236, Cl. 40-2.200.
Dean, Sheldon W., to Olin Corporation. Coated substrate or article having a low friction surface resistant to dewetting at elevated temperatures and process of forming. 3,681,019, Cl. 29-195.000.
Debruyn, Frank E., Jr., to Polaroid Corporation. Permanent laminate photographic film. 3,681,072, Cl. 96-29.000.
Debruyn, Frank E., Jr., to Polaroid Corporation. Permanent laminate photographic products and processes. 3,681,073, Cl. 96-29.000.
DeCardi, Pedro; Taylor, Carl S.; and Roberts, Geoffrey L., to McDonnell Douglas Corporation. Anti-hydroplaning device. 3,680,885, Cl. 280-150.00r.
Dedieu, Guy; and Defour, Claude. Citrates of 5-(2-dimethylaminoethoxy)carvacrol acetate. 3,681,437, Cl. 260-479.00r.
Deere & Company: *See—*
Herscovici, Saul, 3,680,587.
Patterson, Roger Lee; and Brodie, Bryan William, 3,680,742.
Soteropulos, Gust, 3,680,291.
Taverne, Jules L., 3,680,290.
Termont, Charles George, 3,680,651.
Wood, Charles Drury, III; Olsen, Sydney, Alvin; and Potter, Jimmie Clinton, 3,680,287.
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Hagley, Samuel J., Jr., 3,681,130.
Defibrator Aktiebolag: *See—*
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Deflorin Alberto: *See—*
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Defour, Claude: *See—*
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Degen, Donald S.: *See*—
Perlman, David E.; and Degen, Donald S., 3,681,745.

Degenkolb, Robert Stephen; and Skaw, Eugene Raymond, to RCA Corporation. High Q circuits on ceramic substrates. 3,681,713, Cl. 333-82.00r.

Deike, Robert F., 1/4 to Chamberlain, William H. and 1/4 to Chamberlain, Anna B. Anchoring device. 3,680,274, Cl. 52-157.000.

Delalande S.A.: *See*—
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Delavan Manufacturing Company: *See*—
Tate, Roger W.; and Wilcox, Richard L., 3,680,793.

Delu, Ion, to Complexul Pentru Prelucrarea Lemnului Reghin. Intermediate musical instrument between violina and viola. 3,680,424, Cl. 84-274.000.

Demag Aktiengesellschaft: *See*—
Nieboer, Pieter Hendrik, 3,680,849.

Demain, Arnold L.: *See*—
White, Raymond F.; and Demain, Arnold L., 3,681,198.

Dempco, Inc.: *See*—
Vik, Albam M., 3,680,591.

deMunck, Eduard H. L., to N. V. Rubberfabriek Vredestein. Elastic sealing strip. 3,680,270, Cl. 52-403.000.

Denis, Richard E., to General Motors Corporation. Bell gyro and method of making same. 3,680,391, Cl. 73-505.000.

Denki Onkyo Co. Ltd.: *See*—
Ikeuchi, Hiroshi, 3,681,725.
Masuda, Noboru; and Kobayashi, Tunekazu, 3,681,733.
Masuda, Noboru; and Kobayashi, Tunekazu, 3,681,735.
Masuda, Noboru; and Kobayashi, Tunekazu, 3,681,736.

Deplante, Henri, to Avions Marcel Dassault. Adapters for milling-cutters and similar tools. 3,680,435, Cl. 90-11.00d.

Deplante, Henri, to Avions Marcel Dassault. Obturator for openings formed in aircraft fairings. 3,680,815, Cl. 244-46.000.

Derderian, George; and Breglia, Denis R., to United States of America, Navy. Laser beam receiver having a high signal to noise ratio. 3,681,608, Cl. 250-231.00r.

Deschner, Richard E. Feed control. 3,680,970, Cl. 408-17.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Schwarz, Rudolf; and Meyer-Simon, Eugen, 3,681,036.

Deutsche Gold-und Silber-Scheideanstalt vormals Roessler: *See*—
Bebenburg, Walter V.; and Thiele, Kurt, 3,681,366.

Devro, Inc.: *See*—
Tsuzuki, Toshio; and Lieberman, Emanuel R., 3,681,093.

Dewitt, Edward J., to Wallace Supplies Manufacturing Company. Knife sharpening tool. 3,680,264, Cl. 51-109.0bs.

Dexter, Martin; Spivack, John Denon; and Steinberg, David Herbert, to Ciba-Geigy Corporation. Alkylhydroxyphenyl polyamides. 3,681,364, Cl. 260-293.640.

Dexter, Martin; Spivack, John Denon; and Steinberg, David Herbert, to Ciba-Geigy Corporation. N-octadecyl 3,5-di-t-butyl-4-hydroxybenzoate. 3,681,431, Cl. 260-473.00s.

Dey, Arabinda N., to Mallory, P. R., & Co., Inc. Lithium-metal vanadate organic electrolyte cell. 3,681,143, Cl. 136-83.00r.

Dey, Arabinda Narayan; and Bro, Per, to Mallory, P. R., & Co., Inc. Lithium-metal selenide organic electrolyte cell. 3,681,144, Cl. 136-83.00r.

Dhaka, Vir A.; and Kozik, Andrew F., to International Business Machines Corporation. Method for masking semiconductor regions for ion implantation. 3,681,147, Cl. 148-1.500.

D'Huart, Guy, to Compagnie de Saint-Gobin. Ionically modified glass by electric field impaction. 3,681,041, Cl. 65-30.000.

Diamond, Martin J.; and Needles, Howard L., to United States of America, Agriculture. Polymers of acryloxyacyl chlorides and use thereof. 3,681,312, Cl. 260-86.10e.

Diamond, Martin J.; and Needles, Howard L., to United States of America, Agriculture. Polymers of acryloxyacyl chlorides and use thereof. 3,681,314, Cl. 260-89.50h.

DiBenedetto, Joseph R., Jr.: *See*—
English, John R., 3,680,859.

Dick, A. B., Company: *See*—
Keur, Robert I., 3,681,778.

Dick, William; and Gurton, Owen Allen, to Imperial Chemical Industries Limited. Slurried blasting explosive containing as sensitizing ingredient liquid non-explosive alkyl nitrate. 3,681,156, Cl. 149-22.000.

Dickie, George. Can closure. 3,680,732, Cl. 220-57.000.

Dickie, George. Molded lamp. 3,681,590, Cl. 240-10.500.

Dieck, Enoui Leopold, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Signaling system for pneumatic installations in nuclear reactors. 3,681,194, Cl. 176-19.000.

Dieffenbacher, J., GmbH: *See*—
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Diltz, Emory E., to Continental Oil Company. Velocity stack processing of seismic data. 3,681,748, Cl. 340-15.5tc.

Dilworth, James B.; and Crow, Thomas G., to United States of America, Army, mesne. Beamspread measurement camera for recording laser beam intensity distribution. 3,680,965, Cl. 356-235.000.

Dimeler, Glenn R.: *See*—
Mills, Ivor W.; and Dimeler, Glenn R., 3,681,233.
Mills, Ivor W.; Dimeler, Glenn R.; and Kirk, Merritt C., Jr., 3,681,279.

Dionics, Incorporated: *See*—
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Dixie-Marco, Inc.: *See*—
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Dixon, James W.; and Crews, Samuel T., Jr., to Smith, International, Inc. Wall contacting tool. 3,680,647, Cl. 175-325.000.

DMZ 'Anton Ivanor': *See*—
Grigorov, Tzvetan Blagofv, 3,680,255.

Docker, Emerson W., to Docker Safe Trailers, Inc. Travel trailer. 3,680,887, Cl. 280-124.00a.

Docker Safe Trailers, Inc.: *See*—
Docker, Emerson W., 3,680,887.

Doherty, George O. P. 2,6-Bis(trifluoromethyl)-1H-imidazo[4,5-b]pyridine. 3,681,369, Cl. 260-296.00h.

Dohrendorf, Franz Friedrich Johannes, to Nordischer Maschinenbau Rud Baader. Method of and apparatus for gripping a fish for mechanical dressing. 3,680,174, Cl. 17-45.000.

Dohring, Ekkehard; and Kirschner, Peter, to Volkswagenwerk Aktiengesellschaft. Vibration dampener for motor vehicle drive shaft. 3,680,408, Cl. 74-574.000.

Doi, Yoshikazu; Kishikawa, Toshiro; and Nomura, Hiroshi, to Fuji Shashin Kabushiki Kaisha and Nippon Television Hosomo Kabushiki Kaisha. Color television camera with dichroic mirrors. 3,681,521, Cl. 178-5.40e.

Dolegowski, Arthur R., to Norgren, C. A., Co. Lubricator and sensor valve therefor. 3,680,661, Cl. 184-55.00a.

Domba, Elemer, to Nalco Chemical Company. Copolymers from a polyfluoro amido silane and a polyalcohol. 3,681,266, Cl. 260-2.00s.

Domenichini, Carlo P.; and Terjenian, Leo, to Raytheon Company. Capacitive tilter for suppression of spurious electrical radiation. 3,681,652, Cl. 315-85.000.

Domicone, Joseph J.; and Ziver, Garo M., to Corning Glass Works. Surface conditioner for glass-ceramics. 3,681,122, Cl. 117-124.00f.

Donald, Philip Joseph, to RCA Corporation. Method of pressure treating electrophotographic recording elements to change their sensitivity to light. 3,681,071, Cl. 96-1.800.

Doniguian, Thaddeus M., to I.M.I.; division of Becton, Dickinson and Company. Controlled atmosphere incubator system with oxygen probe. 3,680,557, Cl. 128-185.000.

Donkersloot, Hendrik Cornelis; and van Vucht, Johannes Hendrikus Nicolaas, to U.S. Philips Corporation. Method of producing a basic powder for permanent magnets. 3,681,151, Cl. 148-105.000.

Donlon, Richard H., to Transportation Technology, Inc. Transportation system having inertial switch system. 3,680,488, Cl. 104-130.000.

Donskaya, Marina Maiorovna: *See*—
Gridunov, Ivan Tikhonovich; Unkovsky, Boris Vladimirovich; Donskaya, Marina Maiorovna; Andreev, Leonid Vladimirovich; Korolkova, Galina Sergeevna; Ignatova, Ljudmila Alexandrovna; and Grigorian, Alexandr Grigorievich, 3,681,278.

Dorner, Otto: *See*—
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Doughty, Samuel Clifford, to Santa Fe International Corporation. Pile driving system and apparatus. 3,680,644, Cl. 173-139.000.

Douglas, Kenneth R. Walking leg linkage and propulsion mechanism. 3,680,395, Cl. 74-42.000.

Douglas, Kenneth R. Linkage mechanism. 3,680,881, Cl. 280-96.20r.

Douglass, Richard W., to National Research Corporation. Method of making metal fibers. 3,681,063, Cl. 75-208.000.

Dousset, Remy, to Societe Nouvelle des Ateliers de Venissieux. Container. 3,680,728, Cl. 220-4.00r.

Dow Chemical Company, The: *See*—
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Fraini, Edward A.; and Wing, Milton S., 3,681,234.
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Dow Corning Corporation: *See*—
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Downs, Robert F., to Okonite Company, The. Adjustable frequency bipolar square wave generating circuit. 3,681,621, Cl. 307-271.000.

Dowty Meco Limited: *See*—
Paul, Thomas Campbell, 3,680,682.

Dozier, Willie L.; and Carter, James M., Jr., to Top Aid Corporation. Selective programming control system for tuning and recording. 3,681,541, Cl. 179-100.110.

Dragerwerk Aktiengesellschaft: *See*—
Warncke, Ernst, 3,680,555.

Dragoco Spezialfabrik Kong, Riech-und Aroma-Stoffe Gerberding & Co., GmbH: *See*—
Huth, Heinz, 3,681,090.

Draper, Homer L.; and Gagle, Duane W., to Phillips Petroleum Company. Liquid impounding structure. 3,680,319, Cl. 61-30.000.

Drawsky, Ronald H., to Kaiser Aluminum & Chemical Corporation. Slotted flooring. 3,680,530, Cl. 119-28.000.

Drye, Lucien, to Jeumont-Schneider. Electrical rectilinear-motion devices. 3,681,629, Cl. 310-14.000.

DS-Chemie GmbH & Co. KG: *See*—
Schabel, Joachim; and Liebegott, Hans-Peter, 3,681,104.

Du Bois, Bert, to Tenneco Inc. Multi-louvered roughness silencer. 3,680,660, Cl. 181-48.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bouchard, Robert J., 3,681,262.
Carboni, Rudolph A.; and Pikl, Josef, 3,681,450.
Franklin, Richard C., 3,681,320.
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Ducksbury, Alfred N.; and Telford, Bruce C., to Eastman Kodak Company. Method and cell for repetitive high precision pH and like measurements. 3,681,205, Cl. 204-1.00t.

Duffau, Louis: *See—*
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Duffield, Ernest L., Jr.: *See—*
Fast, Clarence R.; Rix, Frederick H.; and Duffield, Ernest L., Jr., 3,681,240.

Dukert, Andrew A.; and Christofas, Alkis, to Pennwalt Corporation. Extrusion strip die for thermoplastic sheet. 3,680,997, Cl. 425-381.000.

Dulis, Edward J.; Kasak, August; and Stasko, William, to Crucible Inc. Low-nickel valve steel. 3,681,058, Cl. 75-128.00a.

Dumbaugh, William H., Jr.; Flannery, James E.; and Hares, George B., to Corning Glass Works. Opal glass compositions comprising calcium fluoride. 3,681,098, Cl. 106-52.000.

Dumeige, Daniel, to AMP Incorporated. Fuse connectors. 3,681,740, Cl. 339-151.00m.

Dunlop, Andrew P.: *See—*
Brown, Lloyd H.; Dunlop, Andrew P.; and Eftax, Daniel S. P., 3,681,287.
Brown, Lloyd H.; Dunlop, Andrew P.; and Eftax, Daniel S. P., 3,681,420.

Dunlop Company Limited, The: *See—*
Hirst, Archie John, 3,680,888.

Dunlop Holdings Limited: *See—*
Ware, Peter G., 3,681,000.

Dunn, Lynn D. Die bar or die bar attachment. 3,680,838, Cl. 254-131.000.

Dupuis, Jean, to General Fireproofing Company, The. Detachable tablet arm assembly. 3,680,911, Cl. 297-162.000.

Dust, Hanspeter: *See—*
Witten-Annen, Hans Lewer; Dust, Hanspeter; and Thonnes, Martin, 3,681,246.

Dutton-Lainson Company: *See—*
Perry, Max W.; and Brockelsby, Norman D., 3,681,550.

Duwel, Dieter: *See—*
Ruschig, Heinrich; Duwel, Dieter; Konig, Johann; and Loewe, Heinz, 3,681,458.

Dye Trucking Company: *See—*
Preddy, L. V., Jr., 3,680,850.

Dymond, Joseph Francis. Footwear. 3,680,231, Cl. 36-59.00r.

Dynamit Nobel A.G.: *See—*
Fuchs, Otto, 3,681,270.

Dynamit Nobel Aktiengesellschaft: *See—*
Junghahnel, Rudolph; Renckhoff, Gustav; and Thewalt, Klaus, 3,681,496.

Dynaplastics, Inc., mesne: *See—*
Neece, Roy M., 3,680,470.

Dyreng, Ray Morgan. Scraping machine and allied structure. 3,680,166, Cl. 15-93.00b.

Dzierski, Stanley F.: *See—*
Terrill, James R.; and Dzierski, Stanley F., 3,680,200.

Eagen, John F.; and Richards, John F., to Esso Research and Engineering Company. Immiscible filtration of dilution chilled waxy oils. 3,681,230, Cl. 208-33.000.

Eagle Picher Industries, Inc.: *See—*
Jurasek, Stanley J., 3,680,712.

Earley, James Valentine; Fryer, Rodney Ian; Ye-Fong Ning, Robert; and Sternbach, Henryk, to Hoffmann-La Roche Inc. Process for preparing 1-lower alkyl-1,4-benzodiazepin-2-ones. 3,681,341, Cl. 260-239.30d.

Eastman Kodak Company: *See—*
Burness, Donald M.; and Looker, Jerome J., 3,681,372.
Ducksbury, Alfred N.; and Telford, Bruce C., 3,681,205.
Foor, Sanford Wayne; and Egan, John F., 3,680,755.
Fowler, William Frank, Jr.; and Klose, Gerhard, 3,681,127.
Francis, Richard H., 3,680,529.
Frank, Lee Fitzpatrick, 3,680,954.
Harvey, Donald M., 3,680,453.
Jenkins, Philip W.; and Brooker, Leslie G. S., 3,681,081.
Johnson, Arthur Lee, 3,681,068.
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Knowles, Frederick G., 3,680,952.
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Eaton Corporation: *See—*
Obermaier, Frank E., 3,680,597.

Eaton Yale & Towne, Inc.: *See—*
Soberski, George, 3,680,533.

Ebata, Hiroyuki, to Yoshida Kogyo Kabushiki Kaisha. Presser foot for a double needle sewing machine. 3,680,510, Cl. 112-235.000.

Eberle, Marcel K., to Sandoz-Wander, Inc. N-Substituted-3-aminoalkanoyl fused cycloalkyl indoles. 3,681,388, Cl. 260-326.5.

Eckert, Konrad; Knapp, Heinrich; Schwartz, Reinhard; and Schuster, Greogor, to Bosch, Robert, G.m.b.H. Fuel injection system for combustion engines. 3,680,535, Cl. 123-119.00r.

Eckert, Robert J., Jr.: *See—*
Saul, George A.; and Eckert, Robert J., Jr., 3,681,335.

Ecodyne Corporation: *See—*
Ryan, Leo F., 3,680,700.

Eddy, John W.; Fitch, Harold G.; Mui, Wing F.; and Valente, Angelo M., to GTE Automatic Electric Laboratories Incorporated. Marker for communication switching system. 3,681,537, Cl. 179-18.0ge.

Edmonds, James C., to Fuller Company. Apparatus for blending pulverulent material. 3,680,222, Cl. 34-57.00a.

Edwards, Alan; and Loukes, David Gordon, to Pilkington Brothers Limited. Coating of glass on a molten metal bath. 3,681,042, Cl. 65-60.000.

Edwards, Gayle Dameron; and Moss, Philip Hotchkiss, to Jefferson Chemical Company, Inc. Thiourea compound. 3,681,456, Cl. 260-552.00r.

Edwards, John A.; and Fried, John H., to Syntex Corporation. 7-Alkoxy-2α-carboxy-1α,2β dialkyl-1,2,3,4,9,12α-hexahydrophenanthrenes and esters and salts thereof. 3,681,427, Cl. 260-468.500.

Edwards, Louis J.; Hopkins, Bruce D.; and Rice, Dennis D., to Hercules Incorporated. Apparatus for measuring changes in the optical refractive index of fluids. 3,680,963, Cl. 356-107.000.

Edwards, William M.: *See—*
Smith, William F.; Mitchell, John H.; Edwards, William M.; and Cox, Phillip W., 3,680,975.

Eftax, Daniel S. P.: *See—*
Brown, Lloyd H.; Dunlop, Andrew P.; and Eftax, Daniel S. P., 3,681,287.
Brown, Lloyd H.; Dunlop, Andrew P.; and Eftax, Daniel S. P., 3,681,420.

Egan, Clark J., to Chevron Research Company. Combined hydrocracking and catalytic dewaxing process. 3,681,232, Cl. 208-80.000.

Egan, John F.: *See—*
Foor, Sanford Wayne; and Egan, John F., 3,680,755.

Egan, Richard Stephan: *See—*
Kurath, Paul; Egan, Richard Stephan; and Jones, Peter Hadley, 3,681,323.

Egrie, Paul H.: *See—*
Sello, Stephen B.; and Egrie, Paul H., 3,681,124.

Ehrlich, Robert M.: *See—*
Cox, Raymond E.; and Ehrlich, Robert M., 3,681,086.

Eibensteiner, Walter, to U.S. Philips Corporation. Tape diverting device in a tape recorder apparatus with drum shift during tape engagement. 3,681,539, Cl. 179-100.20f.

Eichhorn, Herbert H., to Pfizer Inc. Muconic acid and derivatives in gibberellic acid fermentation. 3,681,196, Cl. 195-36.00r.

Elders, Alvin J., to Whirlpool Corporation. Dryer control circuit employing timer having two speeds. 3,681,729, Cl. 337-3.000.

Electrovert Ltd.: *See—*
Gogan, James E., 3,680,817.

Elektrophysikalische Anstalt Bernhard Berghaus: *See—*
Spescha, Gelli Anton, 3,681,662.

Elgan, Douglas L.: *See—*
Clark, Lowell; and Elgan, Douglas L., 3,681,153.

Elgan, Douglas L.; and Hays, Robert G., to Motorola, Inc. Aluminum diffusions. 3,681,155, Cl. 148-188.000.

Elkay Manufacturing Company: *See—*
Farrell, Gerald J., 3,680,152.

Elkin, Samuel; and Lieberman, Hillel, to Temple University. Spiro (imidazolidine-4,3'-quinuclidine)-2,5-diones. 3,681,363, Cl. 260-293.530.

Elkins, Vance V., Jr. Method of fitting golfer with putter and improving putting accuracy. 3,680,860, Cl. 273-32.00r.

Elkow, Steven A., to Sola Basic Industries, Inc. Internal idler drum. 3,680,848, Cl. 263-6.00c.

Ellinger, Rudolph H.: *See—*
Kohl, Willibald F.; and Ellinger, Rudolph H., 3,681,091.

Elliott, James O., to General Motors Corporation. Pressure responsive motor control circuit for vehicle leveling. 3,681,671, Cl. 318-481.000.

Eluard, Robert, to L'Air Liquide Societe Anonyme Pour l'Etude et l'Exploitation des Procedes. Process for regenerating adsorption masses. 3,680,288, Cl. 55-58.000.

Embree, John M.: *See—*
Gwathmey, Edward S.; and Embree, John M., 3,681,580.

Emerson Electric Co.: *See—*
Brundage, Robert Wesley, 3,680,313.
Brundage, Robert Wesley, 3,680,989.

Emhart Corporation: *See—*
Burtis, Winfield R., 3,680,329.

Emmerich, Heinz; and Bulk, Eggert, to Solo Kleinmotoren GmbH. Chain saw. 3,680,608, Cl. 143-32.000.

Emmett, Robert C., Jr., to Envirotech Corporation. Method for stabilizing producer well water. 3,681,238, Cl. 210-50.000.

Enequist Chemical Co., The: *See—*
Schwartz, Walter; Berkowitz, William H.; and Esquenet, Bernard E., 3,681,211.

Engel, Heinz: *See—*
Hess, Rudolf; and Engel, Heinz, 3,680,302.

Engelhardt, Alvin, to Technicon Instruments Corporation. Self-locating sample receptacle having integral identification label. 3,680,967, Cl. 356-246.000.

Engert, Heinz: *See—*
Tupaj, Manfred Paul; and Engert, Heinz, 3,680,871.

English, Christopher Durrant, to Tracked Hovercraft Limited. Vehicle propelled by linear motor. 3,680,489, Cl. 104-148.0lm.

English, John R., 1/2% to DiBenedetto, Joseph R., Jr. Combined billiard balls rack and indicator for placing the balls. 3,680,859, Cl. 272-22.000.

English, John Walter, to National Research Development Corporation. Hydrofoils for ships and like vessels. 3,680,511, Cl. 114-162.000.

English, William A.: *See—*
Young, Robert R.; and English, William A., 3,680,984.

Ensign, Harold W., to Cla-Val Co. Static-reducing and vapor-reducing loading valve for tank trucks. 3,680,606, Cl. 141-128.

Environetics Inc.: *See—*
Papp, Josef, 3,680,431.

Envirotech Corporation: *See—*
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Epstein, Philip L., to Quindar Electronics, Inc. Telemetering apparatus. 3,681,696, Cl. 325-320.000.

Erbacher, Alfons, to Glanzstoff AG. Godets with contactless transmission units in electrically operated sensing circuits. 3,680,383, Cl. 73-351.000.

Erben, Klaus Dieter; Kroy, Walter; and Mehnert, Walter E., to Messerschmitt-Bolkow-Blohm GmbH. Superconductor device for use in moving bodies for navigation purposes to determine the change in orientation thereof using the Sagnac effect. 3,681,687, Cl. 32471.00r.

Erickson Electrical Equipment Co.: *See—*
Erickson, John W., 3,681,548.

Erickson, John W., to Erickson Electrical Equipment Co. Arc control for load-break switches. 3,681,548, Cl. 200-144.00r.

Erickson, Wayne K.; and Buchanan, David R., to Phillips Petroleum Company. Apparatus having chamber of oval cross-section for heat treating large denier tow. 3,680,334, Cl. 68-5.000.

Erni & Co., Firma: *See—*
Hugelshofer, Max, 3,681,592.

Ernst, Charles H.; and Cawley, Martin Dean, to TRW Inc. Holographic apparatus utilizing a pulsed laser. 3,680,944, Cl. 350-3.500.

Ernst, Richard R., to Varian Associates. RF spectrometer employing modulation of a DC magnetic field to excite resonance. 3,681,680, Cl. 324-.50r.

Esch, Anne Mary Von, to Abbott Laboratories. 9-Substituted erythromycin A & B oximes. 3,681,326, Cl. 260-210.00e.

Esquenet, Bernard E.: *See—*
Schwartz, Walter; Berkowitz, William H.; and Esquenet, Bernard E., 3,681,211.

Esquire Inc.: *See—*
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Essex International, Inc.: *See—*
Preston, Jerome A., 3,681,282.

Esso Research and Engineering Company: *See—*
Brewster, Phillip W.; and Macdonald, John M., 3,681,150.
Eagen, John F.; and Richards, John F., 3,681,230.
Gilani, Syed S. H.; Murray, Donald W.; and Salva, Juan M., 3,681,242.
Makowski, Hanry S.; and Borzel, Paul, 3,681,309.
Newman, Neil F., 3,681,327.
Oswald, Alexis A., 3,681,219.
Rosenfeld, Daniel D.; and Gorbaty, Martin L., 3,681,352.
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Esteve-Subirana, Antonio; and Coutellier, Chislain, to Laboratoires OM, S.A. and Delalande S.A. Method for combating disturbances of the lipid content of the blood. 3,681,503, Cl. 424-316.000.

Etheridge, J. Ray. Anti-theft auto switch. 3,681,544, Cl. 200-44.000.

Ethyl Corporation: *See—*
Schell, Raymond A., 3,681,415.

Evans Products Company: *See—*
Chapman, Harvey W.; and Shook, Jackson A., 3,680,491.
Weage, Kenneth A., 3,680,492.

Evers, William John. Apparatus for producing cyanogen chloride using a flooded reaction. 3,681,034, Cl. 23-283.000.

Everson, Charles W., to Merck & Co., Inc. Method of making sour dough bread. 3,681,083, Cl. 99-90.00s.

Eyb, Wolfgang; and Klosterhuber, Robert, to Porsche, Dr.-Ing. H.c.F., K.G., Firma. Bearing for vehicle wheels, particularly for driven wheels of automobiles. 3,680,654, Cl. 180-48.00r.

Eyelet Specialty Company: *See—*
Landen, William James, 3,680,745.

F&M Taco Shell Company: *See—*
Brown, Robert E., 3,680,474.

Fairchild Camera and Instrument Corporation: *See—*
Burns, Joseph, 3,681,645.
Wood, John R., 3,680,198.

Fakes, Roger E., to Auto-Chlor System. Detergent and wetting agent dispenser for dishwashing machines. 3,680,784, Cl. 239-126.000.

Falbe, Jurgen: *See—*
Bergerhoff, Gunter; Tihanyi, Bela; Falbe, Jurgen; and Weber, Jurgen, 3,681,435.
Bergerhoff, Gunter; Tihanyi, Bela; Falbe, Jurgen; Weber, Jurgen; and Weisheit, Werner, 3,681,477.

Falbe, Jurgen; Tummes, Hans; and Weber, Jurgen, to Ruhrchemie Aktiengesellschaft. Process of producing aldehydes using a catalyst including a group VIII metal and phosphorus. 3,681,465, Cl. 260-604.0hf.

Falk, Edward J., to Wagner Electric Corporation. Control valve. 3,680,921, Cl. 303-6.00c.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Knupfer, Hans; and Schellhammer, Carl-Wolfgang, 3,681,397.
Meckel, Walter; and Muller, Erwin, 3,681,290.
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Traubel, Harro; and Konig, Klaus, 3,681,125.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Ruschig, Heinrich; Duwel, Dieter; Konig, Johann; and Loewe, Heinz, 3,681,458.
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Scherer, Otto; Hahnle, Reinhard; and Schneider, Gunter, 3,681,422.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Hahn, Helmut; Rebsdat, Siegfried; Ruchlak, Kasimir; and Schuierer, Erich, 3,681,426.
Herz, Luis; Mohr, Reinhard; Mundlos, Eberhard; Mundlos, Eberhard; and Ostermeier, Johann, 3,681,347.
Radscheit, Kurt; Kelkheim, Taunus; Stache, Ulrich; Haede, Werner; Hofheim, Taunus; Fritsch, Werner; Neuenhain, Taunus; and Lindner, Ernst, 3,681,344.
von der Eltz, Hans-Ulrich; and Kollodzeiski, Norbert, 3,681,005.

Faroy, Inc.: *See—*
Frazier, Preston J. Jr.; and Hubenak, Daniel W. Jr., 3,680,995.
Reilly, Joseph F., Jr.; Daigle, Joseph D.; and Hubenak, Daniel W., Jr., 3,681,123.

Farr, Glyn Phillip Reginald, to Girling Limited. Brake adjusters. 3,680,664, Cl. 188-79.5gt.

Farrace, Frederick Thomas: *See—*
Cofek, Henry Robert; and Farrace, Frederick Thomas, 3,680,966.

Farrell, Gerald J., to Elkay Manufacturing Company. Appliance retainer structure. 3,680,152, Cl. 4-187.00a.

Farrelly, Frank Williams, to Process Evaluation and Development Corporation. Paper pulp digester blowdown method. 3,681,191, Cl. 162-52.000.

Fast, Clarence R.; Rix, Frederick H.; and Duffield, Ernest L., Jr., to Amoco Production Company. Retarded acid emulsion. 3,681,240, Cl. 252-8.55c.

Faure, Marc Henri Jean: *See—*
Marchetti, Charles Joseph; and Faure, Marc Henri Jean, 3,680,657.

Faust, Valentine T., Jr.: *See—*
Aurilio, Giuseppe; Aurilio, Giovanni; and Faust, Valentine T., Jr., 3,680,378.

Feazle, Richard B.: *See—*
Mott, James D.; and Feazle, Richard B., 3,680,342.

Federal Paper Board Company, Inc.: *See—*
D'Alessio, Joseph R., 3,680,687.

Federal-Mogul Corporation: *See—*
Schwarz, Steven E., 3,680,874.

Fein, Marvin M.: *See—*
Graham, David E.; Schulze, Thomas; and Fein, Marvin M., 3,681,429.

Feldstein, Nathan, to RCA Corporation. Method of producing a luminescent-screen structure including light-emitting and light absorbing areas. 3,681,110, Cl. 117-33.5cm.

Felsenheld, Robert A.: *See—*
Perrotti, Emmanual J.; Ranghelli, Joseph C.; and Felsenheld, Robert A., 3,681,769.

Feltman, Charles. Wind powered spinning toy. 3,680,252, Cl. 46-53.000.

Felton, George F., Jr., to Sun Oil Company. Method and apparatus for evaluating thermal stability of quenching oils. 3,680,356, Cl. 73-15.00r.

Feltzin, Joseph: *See—*
Burns, Joseph P.; and Feltzin, Joseph, 3,681,106.

Ferguson, Harry Research Limited: *See—*
Webb, Oswald, 3,680,673.

Fernseh G.m.b.H.: *See—*
Schneider, Hans-Dieter, 3,681,520.

Ferranti, Limited: *See—*
Roberts, John Tudor, 3,680,206.

Ferree, Carman M.; and Miller, Douglas F., to Continental Oil Company. Method and apparatus for determining near-surface corrections from seismic data. 3,681,749, Cl. 340-15.500.

Fibre-Optics Industries, Inc.: *See—*
Aurilio, Giuseppe; Aurilio, Giovanni; and Faust, Valentine T., Jr. (said Aurilio, Giuseppe and Aurilio, Giovanni assor to), 3,680,378.

Fichter, Barry S., to American Standard Inc. Pilot valve operated fluidic valve. 3,680,573, Cl. 137-81.500.

Fierro Esponja, S.A.: *See—*
Celada, Juan, 3,681,049.

Filterwerk Mann & Hummel GmbH: *See—*
Baer, Herbert J.; Hense, Kurt R.; and Hofferer, Richard, 3,680,706.

Findlay, Hugh T.; and Stone, Jerry F., to International Business Machines Corporation. Multi colored unitary self supported polymer matrix transfer medium. 3,681,186, Cl. 161-166.000.

Fine, Harry C., 2nd: *See—*
Roberts, John F., 3,681,589.

Finn, George P., Jr., to Floturn Inc. Method and apparatus for reconditioning a drum of a reproducing machine. 3,680,341, Cl. 72-125.000.

Finnerty, John Gerard, Sr. Outdoor illuminated signs. 3,680,237, Cl. 40-130.00m.

Firestone Tire & Rubber Company, The: *See—*
Johnson, Charles R., 3,681,304.

Firth, David. Variable pitch sheave. 3,680,404, Cl. 74-230.17c.

Fischer, Adolf: *See—*
Kiehs, Karl; Koenig, Karl-Heinz; and Fischer, Adolf, 3,681,425.

Fischer, Harry F., Jr.; and Lang, John N., to All-State Industries, Inc. Roof with gravel stop. 3,680,269, Cl. 52-94.000.

Fischer, Robert B.: *See—*
Cox, Conrad M.; and Fischer, Robert B., 3,681,682.

Fish, William M., to Aluminum Company of America. Extraction of alumina from bauxite. 3,681,013, Cl. 23-143.000.

Fisher Scientific Company, mesne: *See—*
Schuch, John A.; and Brech, Frederick, 3,680,959.

Fitzgerald, Maurice J., to Polaroid Corporation. Photosensitive emulsion comprising graft copolymer of amino alkyl acrylate. 3,681,079, Cl. 96-114.000.

Fives Lille-Cail: *See—*
Giorgi, Jean Claude; and Windal, Georges, 3,680,621.

Flannery, James E.: *See—*
Dumbaugh, William H., Jr.; Flannery, James E.; and Hares, George B., 3,681,098.

Flannery, John B., Jr.: *See—*
Haas, Werner E. L.; Adams, James E., Jr.; and Flannery, John B., Jr., 3,680,950.

Fleck, Donald G.: *See—*
Hein, Frank J.; and Fleck, Donald G., 3,680,625.

Fleissner, Heinz, to Vepa AG. Apparatus for the treatment of material lengths or sliver-type material. 3,680,221, Cl. 34-54.000.

Fletcher, Stewart G., to Latrobe Steel Company. Fully dense consolidated-powder superalloys. 3,681,061, Cl. 75-171.000.

Fleury, Camille. Snowmobile protective device. 3,680,882, Cl. 280-150.000.

Flieder, Robert A.; and Weisglass, Louis L., to Berkey Photo, Inc. Timing circuit. 3,681,613, Cl. 307-141.400.

Florek, Louis A. Fishing rig. 3,680,246, Cl. 43-42.190.

Floturn Inc.: *See—*
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Fluidtech Corporation: *See—*
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Fluor Ocean Services, Inc.: *See—*
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FMC Corporation: *See—*
Ciesielski, Bernard A., 3,680,686.
Kibbel, William H., Jr.; and O'Neill Eugene T., 3,681,022.
Patel, Vithal C.; and Orwoll, Edward F., 3,681,482.

Foggo, James Douglas, to Thomas French & Sons Limited. Curtains. 3,681,158, Cl. 156-70.000.

Foor, Sanford Wayne; and Egan, John F., to Eastman Kodak Company. Web processing apparatus. 3,680,755, Cl. 226-92.000.

Ford, Duane B.: *See—*
Walker, Grant W.; and Ford, Duane B., 3,680,662.

Ford, Thomas R.; and Martin, Edward T., III, to Mattel, Inc. Method of forming films. 3,681,489, Cl. 264-307.000.

Forrest, Willie Mae. Duo heating pad. 3,680,563, Cl. 128-402.000.

Forster, Franz, to Linde Aktiengesellschaft. Hydrostatic machine. 3,680,312, Cl. 60-53.00a.

Fortino, Samuel, to Gem Electric Mfg. Co., Inc. Electric flasher. 3,681,730, Cl. 337-92.000.

Fortson, Warren D. Wire stringing rig. 3,680,807, Cl. 242-94.000.

Foseco Trading, A.G.: *See—*
Rausch, Paul Gilger, 3,680,827.

Foucher, Walter D., Jr.; and Norman, Thomas W., to Texaco Inc. Catalyst and method of making same. 3,681,260, Cl. 252-465.000.

Fowler, William Frank, Jr.; and Klose, Gerhard, to Eastman Kodak Company. Radiation sensitive film element. 3,681,127, Cl. 117-138.80f.

Fox, William Burke: *See—*
Young, David Edward; Anderson, Lowell Ray; and Fox, William Burke, 3,681,423.

Foxboro Company, The: *See—*
Beardsley, Earl A.; Bowditch, Hoel L.; and Prescott, Robert C., 3,680,580.
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Frailing, Le Roy H.: *See—*
Cannon, Robert E.; and Frailing, Le Roy H., 3,680,430.

Fraini, Edward A.; and Wing, Milton S., to Dow Chemical Company, The. Production of aromatics from olefinic hydrocarbons. 3,681,234, Cl. 208-141.000.

Francis, Richard H., to Eastman Kodak Company. System for selectively coating webs. 3,680,529, Cl. 118-8.000.

Franco, Louis B. Fishing fly case. 3,680,750, Cl. 224-5.00g.

Frank, Arlen W.; and Baranauckas, Charles F., to Borg-Warner Corporation, mesne. Perfluoro-1-cycloalken-1,2-ylene-diphosphoryl compounds. 3,681,448, Cl. 260-543.

Frank, Lee Fitzpatrick, to Eastman Kodak Company. Electrography. 3,680,954, Cl. 355-3.000.

Franklin, Richard C., to Du Pont de Nemours, E. I., and Company. Preparation of disazo J acid urea dyestuffs. 3,681,320, Cl. 260-175.000.

Frazier, Bruce J.: *See—*
Mason, John F.; Frazier, Bruce J.; and Freemen, Norman L., 3,680,188.

Frazier, Preston J. Jr.; and Hubenak, Daniel W. Jr., to Faroy, Inc. Molding apparatus for candles and the like. 3,680,995, Cl. 425-200.000.

Freedman, Gerald: *See—*
Freedman, Paul; Freedman, Gerald; Wahls, Robert A.; and Hornstein, Harvy R., 3,680,915.

Freedman, Paul; Freedman, Gerald; Wahls, Robert A.; and Hornstein, Harvy R., to Freedman Seating Company. Automobile seat with adjustable head-rest. 3,680,915, Cl. 297-410.000.

Freedman Seating Company: *See—*
Freedman, Paul; Freedman, Gerald; Wahls, Robert A.; and Hornstein, Harvy R., 3,680,915.

Freemen, Norman L.: *See—*
Mason, John F.; Frazier, Bruce J.; and Freemen, Norman L., 3,680,188.

Freiberg, Leslie Alan, to Abbott Laboratories. De(N-methyl)-N-substituted derivatives of erythromycin. 3,681,325, Cl. 260-210.00e.

Freibergs, Elmer, to United States of America, Army. Reciprocal latching ferrite phase shifter. 3,681,715, Cl. 333-31.00a.

Freudenberg, Carl: *See—*
Schmitt, Wilhelm, 3,681,142.

Frick Company: *See—*
Garland, Milton W., 3,680,324.

Fridinger, Tomas L.; and Mutsch, Edward L., to Minnesota Mining and Manufacturing Company. Substituted alkanal oximes. 3,681,386, Cl. 260-327.00m.

Fried, John H.: *See—*
Crabbe, Pierre; and Fried, John H., 3,681,411.
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Fried, John H., to Syntex Corporation. 1,6 Oxidocyclodecapentaene alcohols, aldehydes, and acids. 3,681,391, Cl. 260-333.000.

Friend, Lindsay C., to Berg Electronics, Inc. Circuit board socket. 3,681,738, Cl. 339-17.00r.

Friess, Emmanuel: *See—*
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Fry, Earl E. Piano keyboard with magnetic key control. 3,680,426, Cl. 84-433.000.

Fryer, Rodney Ian: *See—*
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Fitch, Harold G.: *See—*
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Galeano, Sergio F., to Owens-Illinois, Inc. Defiberation apparatus for separating cellulosic fibrous material from refuse. 3,680,796, Cl. 241-21.000.
Galiano, Francis R.; Thackaberry, Samuel P.; Smith, Wayne E.; and Anderson, Raymond P., to Custom Resins, Inc., mesne. Crosslinked nylon by irradiation of a graft copolymer of nylon with an ethylene acrylate or modified copolymer. 3,681,216, Cl. 204-159.14.
Galitz, Raymond F., to Continental Can Company, Inc. Vapor knife. 3,680,795, Cl. 239-587.000.
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Gasiunas, Donatas V., to Technicon Instruments Corporation. Automatic calibration apparatus. 3,681,577, Cl. 235-151.300.
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Gazza, George E.; and Messier, Donald R., to United States of America, Army. Cryo-coprecipitation method for production of ultrafine mixed metallic-oxide particles. 3,681,011, Cl. 23-24.00r.
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Genovese, John M.; and Walterick, Kenneth H., to Circle F Industries, Inc. Snap-in fluorescent lampholder with front end release. 3,681,593, Cl. 240-51.11r.
Genta, Guido R. Anthraquinone dyestuf manufacture. 3,681,402, Cl. 260-373.000.
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Girard, Herbert A. Core transfer process. 3,681,007, Cl. 8-155.000.
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Gladwin, Floyd R. Trash compactor cabinet. 3,680,475, Cl. 100-100.000.
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Goldshtein, Moisei Abramovich; and Goldshtein, Arkady Moiseevich. Method of manufacturing stator core frame of electrical machine, for example, turbogenerator, and device for machining said frame for realization of said method. 3,680,440, Cl. 90-15.000.
Goldstein, Murray S.; Lerman, Harold; Acker, Robert; and Ross, Herbert S., to Singer Company, The. Method and apparatus for performance monitoring of dual platform inertial navigation systems. 3,680,355, Cl. 73-1.00e.
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Good, Richard Samuel Jonathon; and Harvey, Barry Charles, to Marwin Machine Tools Limited. Machine tool gantries. 3,680,438, Cl. 90-11.00r.
Goodboy, George O., Jr.; Green, Donald W.; and Kopec, Conrad J., to Macro Synetic Systems, Inc. Off-shore transporation industrial and urban. 3,680,320, Cl. 61-46.000.
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Gould, Francis E.; and Shepherd, Thomas H., to National Patent Development Corporation. Water soluble entrapping of a fragrance. 3,681,248, Cl. 252-89.000.
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Gupton, James A., Jr., to Corning Glass Works. Electrophoretic deposition of color phosphors. 3,681,223, Cl. 204-181.000.
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Gutman, Arnold D., to Stauffer Chemical Company. Oxime carbamate phosphate, phosphonate, phosphinate and phosphoroamidates. 3,681,478, Cl. 260-944.000.
Gutman, Arnold D., to Stauffer Chemical Company. Oxime carbamate phosphate, phosphonate, phosphinate and phosphoroamidates. 3,681,479, Cl. 260-944.000.
Gutmann, Stephan; and Huguenin, Rene, to Sandoz Ltd., (a/k/a Sandoz AG). Ergonarcornines. 3,681,355, Cl. 260-268.0pe.
Gwathmey, Edward S.; and Embree, John M., to Teledyne, Inc. Rotation, climbout, and go-around control system. 3,681,580, Cl. 235-150.220.
Gyorgy, Paul. Food product containing tempeh. 3,681,085, Cl. 99-107.000.
Haas, Carl: *See—*
Haas, Carl; and Stabe, Heinrich (said Stabe assor. to said), 3,681,692.
Haas, Carl; and Stabe, Heinrich, said Stabe assor. to said Haas, Carl. Suspending arrangement for moving coils of the like. 3,681,692, Cl. 324-154.00r.
Haas, James P., to Koppers Company, Inc. Spring feeder plate. 3,680,856, Cl. 271-44.00r.
Haas, Werner E. L.; Adams, James E., Jr.; and Flannery, John B., Jr., to Xerox Corporation. Grandjean state liquid crystalline imaging system. 3,680,950, Cl. 350-150.000.
Habicht, Ernst: *See—*
Zerginyi, Janos; and Habicht, Ernst, 3,681,502.
Hacke, Hans Juergen, to Siemens Aktiengesellschaft. Method of forming stacked circuit boards. 3,680,209, Cl. 29-625.000.
Hackett, Homer L.; Cullison, David A.; and Peveto, Edmond A., to Continental Oil Company. Purification of hydrogen chloride. 3,681,014, Cl. 23-154.000.
Hadley, David James: *See—*
Barclay, John Lynn; Gasson Edward James; and Hadley, David James, 3,681,421.
Haede, Werner: *See—*
Radscheit, Kurt; Kelkheim, Taunus; Stache, Ulrich; Haede, Werner; Hofheim, Taunus; Fritsch, Werner; Neuenhain, Taunus; and Lindner, Ernst, 3,681,344.
Haener, Franz, to Neptune Meters Limited. Generator of electrical signal pulses. 3,681,631, Cl. 310-37.000.
Haeusler, Jochen; Marz, Gunther; and Seiffert, Helmut, to Siemens Aktiengesellschaft. Method of forming workpieces by means of underwater impact pressure. 3,680,397, Cl. 72-56.000.
Hagen, Helmut; and Becke, Friedrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. 2-Carbamyl-2-imidazolines and method for their production. 3,681,379, Cl. 260-247.50r.
Hagenweiler, Kurt: *See—*
Scholz, Kurt; and Hagenweiler, Kurt, 3,681,277.
Hager, Clarence H., to Modern Caster Co., Inc. Tire tray construction. 3,680,710, Cl. 211-24.000.
Hager, Walter: *See—*
Albrecht, Ernst; and Hager, Walter, 3,680,506.
Hagerty, William Kenneth. Apparatus for automobile damage correction. 3,680,353, Cl. 72-420.000.
Hagley, Samuel J., Jr., to Deering Milliken Research Corporation. Washable rugs. 3,681,130, Cl. 117-143.00a.
Hahn, Helmut; Rebsdat, Siegfried; Ruchlak, Kasimir; and Schuierer, Erich, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Fluorinated polymers having bisurethano side chains. 3,681,426, Cl. 260-471.00c.
Hahner, Reinhard: *See—*
Kirn, Manfred; Hahner, Reinhard; Stroezel, Reinhold; Hettich, Alfred; and Burklin, Max, 3,680,642.
Hahnle, Reinhard: *See—*
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Halbrook, Noah J.: *See—*
Bunk, Albert R.; Bennett, Bailey; Berry, David A.; Halbrook, Noah J.; Schuller, Walter H.; and Lawrence, Ray V., 3,681,268.
Haldopoulos, Ioakim; and Niemann, James Edward, to American Standard Inc. Drain for plumbing fixtures. 3,680,153, Cl. 4-191.
Hale, Thomas F., to Capital Machine Company, Inc. Extension dog system for veneer slicer. 3,680,612, Cl. 144-178.000.
Hall, James Edward: *See—*
Branch, Geoffrey Hindle; Hall, James Edward; Bickerstaff, Kenneth; and Russell-Rayner, Albert Patrick, 3,680,677.
Hall, Marvin J., to United States of America, Army. Air current operated land mine. 3,680,482, Cl. 102-8.000.
Hall, Wendell H. Teaching system. 3,680,224, Cl. 35-9.00e.
Hallanger, Lawrence W., to United States of America, Navy. Method of measuring the relative depth between two or more underwater locations. 3,680,216, Cl. 33-301.000.
Hallerback, Stig Lennart, to Trelleborgs Gummifabriks Aktiebolag. Linings for rotary mills. 3,680,799, Cl. 241-183.000.
Halliburton Company: *See—*
Boyd, Charles L.; and Roach, James D., 3,680,379.
Mason, John F.; Frazier, Bruce J.; and Freemen, Norman L., 3,680,188.
Hallmann, Hermann, to MRT Magnet-Regeltechnik GmbH. Magnetically operable blocking and control device. 3,681,727, Cl. 335-253.000.
Halton, Murray. Safety conveyor. 3,680,685, Cl. 198-232.
Hamanaka, Seiichi: *See—*
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Hamann, Donald D., to Research Corporation. Method and apparatus for separating objects having different resiliencies. 3,680,694, Cl. 209-119.000.
Hameister, Harold L.; and Reitter, Erwin, Jr., to Remington Arms Company, Inc. Compression molding of wooden articles. 3,681,181, Cl. 161-41.000.
Hamilton, J. Brook: *See—*
Martin, Charles H., 3,680,277.
Hamilton, John E.: *See—*
McKie, Eugene T.; and Hamilton, John E., 3,681,484.
Hammann, Ingeborg: *See—*
Schmidt, Karl-Julius; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,681,334.
Hanada, Hiroshi, to Canon Kabushiki Kaisha. CdS-chalcogen ternary compound mixture as photoconductive material in an electrophotographic member. 3,681,067, Cl. 96-1.500.
Hanby, Fredrick E., to Tasker Industries, Inc. Blocking oscillator with extended variable pulse. 3,681,711, Cl. 331-112.000.
Handling, Simon, Engineers Limited: *See—*
Poulton, Barrie Armstrong, 3,680,725.
Hansen, Quinten A. Clutch-brake mechanism and control system therefor. 3,680,669, Cl. 192-18.00r.
Hansen, Quinten A. Clutch-brake mechanism and mounting and control system therefor. 3,680,670, Cl. 192-18.00r.
Hansen, Raymond E.; and Huesgen, Eugene L., to Carrier Corporation. Rotor structure for turbo machines. 3,680,979, Cl. 416-198.000.
Hansen, William A. Portable tankless glass washer. 3,680,567, Cl. 134-57.00d.
Hanson, Raymond: *See—*
Barker, Joseph; and Hanson, Raymond, 3,680,527.
Hanson, Richard E.: *See—*
Sisson, Donald R.; and Hanson, Richard E., 3,680,778.
Happ, George M.; and Kottmeier, Merrill F. Magnetic structure for treating liquids containing calcareous matter. 3,680,705, Cl. 210-222.
Happe, Reynold, to McGraw-Edison Company. Chuck for drill or like. 3,680,877, Cl. 279-62.000.
Harbonn, Jacques; and Aubert, Jean-Pierre, to Institute Francais du Petrole des Carburants et Lubrifiants. Autonomous device for the storage and use of hydraulic and/or pneumatic power. 3,680,311, Cl. 60-51.000.
Hardy, Robert Allis, Jr.: *See—*
Howell, Charles Frederick; Hardy, Robert Allis, Jr.; and Quinones, Nicanor Quinones, 3,681,357.
Hardy, William C.: *See—*
Berry, Holland J.; Hardy, William C.; and Zadow, Dale W., 3,680,635.
Berry, Holland J.; Hardy, William C.; and Zadow, Dale W., 3,680,636.
Hares, George B.: *See—*

Dumbaugh, William H., Jr.; Flannery, James E.; and Hares, George B., 3,681,098.

Hargis, Billy M., to American Lava Corporation, mesne. Hermetic power package. 3,681,513, Cl. 174-52.00s.

Hargreaves, Edward William, to Special Engineering Development Limited. Batching of articles. 3,680,447, Cl. 93-93.00k.

Harita, Yasuhiro: *See—*
Tabuchi, Ichiro; and Harita, Yasuhiro, 3,680,518.

Harms, Englebert G.: *See—*
Menges, Hans G. L.; Lehnen, Josef P.; and Harms, Englebert G., 3,680,844.

Harrelson, Glen R., to Olinkraft, Inc. Wrap-around carrier, blank therefor and shoulder divider for use therewith. 3,680,765, Cl. 229-40.000.

Harris, Carl Robert. Inflatable back and head floor rest. 3,680,917, Cl. 297-456.000.

Harris, George J.; and Richards, William D., to American Optical Corporation. Two-variable strip chart recorder. 3,681,774, Cl. 346-62.000.

Harris, Max Emerson, to Du Pont de Nemours, E. I., and Company. Helically crimped fibers of poly (trimethylene terephthalate) having asymmetric bierfringence. 3,681,188, Cl. 161-173.000.

Harris, Richard William. Brakes. 3,680,665, Cl. 188-134.000.

Hart-Carter Company: *See—*
Wellan, Wayne G.; Converse, John O.; and Swanson, Arden E., 3,680,285.

Harter Corporation: *See—*
Gilbert, Stuart John; and Gilbert, Karen T., 3,680,916.

Harting, Jurgen: *See—*
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Hartman, Elmer C., III, to Hartman Metal Fabricators, Inc. Load detector for automatic storage apparatus. 3,681,607, Cl. 250-222.00r.

Hartman Metal Fabricators, Inc.: *See—*
Hartman, Elmer C., III, 3,681,607.

Hartz, Kenneth E.: *See—*
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Haruo, Takei: *See—*
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Harvey Aluminum, (Incorporated): *See—*
Nino, Fernando J.; and Cole, Donald Q., 3,680,348.

Harvey, Barry Charles: *See—*
Good, Richard Samuel Jonathon; and Harvey, Barry Charles, 3,680,438.

Harvey, Donald M., to Eastman Kodak Company. Photographic apparatus. 3,680,453, Cl. 95-10.0ct.

Harzer, Peter, to Wandel u. Goltermann. Variable-frequency generator with digital frequency selection. 3,681,706, Cl. 331-1.00a.

Hashimoto, Norishige: *See—*
Yokoo, Makoto; Keshi, Akizo; Hashimoto, Norishige; and Nakahara, Shigenobu, 3,681,271.

Havel, Karel. Drafting aid. 3,680,226, Cl. 35-26.000.

Hawker Siddeley canada Ltd.: *See—*
Mitten, Leonard A.; and Chapman, Robert E., 3,680,611.

Hawthorne, Vaughn T. Air brake hose coupler gasket. 3,680,875, Cl. 277-171.000.

Hayakawa, Masahiro, to Amada Co., Limited. Work start synchronizer in plural press brakes coupling operation. 3,680,339, Cl. 72-28.000.

Hayakawa, Osamu, to Kabushikikaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.). Contaminant detector comprising means for selectively applying pressure to liquify bubbles. 3,680,962, Cl. 356-103.000.

Hayashi, Yoshimasa: *See—*
Nakajima, Yasuo; Hayashi, Yoshimasa; Yoshimura, Toru; Sugihara, Kunihiko; and Nagumo, Shin-Ichi, 3,680,318.

Hayman, Dennis J., to Hydrometals, Inc., mesne. Single handle faucet valve. 3,680,592, Cl. 137-625.400.

Hayman, Jack H., Jr.: *See—*
Barr, Irwin R.; Hayman, Jack H., Jr.; and Wilkening, Harold A., 3,680,240.

Hays, Kenneth Scott: *See—*
Werner, Walter Myers; Vockroth, William Joseph; and Hays, Kenneth Scott, 3,681,512.

Hays, Robert G.: *See—*
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Elgan, Douglas L.; and Hays, Robert G., 3,681,155.

Hayssen Manufacturing Company: *See—*
James, Robert C.; Vogel, Walter H.; and Sorenson, Richard D., 3,680,446.

Healy, Elton F. Dual crankshaft internal combustion engine. 3,680,396, Cl. 74-44.000.

Heathcote, Bernard Vincent: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Heathcote, Bernard Vincent; and Bristow, Norman William, 3,681,373.

Heckel, Reinhold. Link strap. 3,680,304, Cl. 59-80.000.

Heidegger, Peter: *See—*
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Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
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Heidenhain, Johannes, Dr., Firma: *See—*
Schmitt, Walter, 3,681,605.

Heijnis, James W. IJ., to Akzona Incorporated. Stuffer crimping apparatus. 3,680,181, Cl. 28-1.600.

Hein, Frank J.; and Fleck, Donald G., to TRW Inc. Heat reflector. 3,680,625, Cl. 164-127.000.

Hein, Louis T. Weed spud. 3,680,641, Cl. 172-371.000.

Heinrichs, Frank W., Jr.; Polasky, Alex F.; Honey, Charles C.; and Toothman, Lawrence R., to McGraw-Edison Company. Conformable insulation. 3,681,516, Cl. 174-138.00e.

Heit, Allyn Harold; and Williamson, James Norris, to Sybron Corporation. Per(Halo-oxygen) acid oxidation, purification and recovery process. 3,681,213, Cl. 204-82.000.

Heitz, Walter; and Pfitzner, Klaus, to Merck Patent Gesellschaft mit beschrankter Haftung. Swellable polymers of methacrylic and acrylic acid esters. 3,681,269, Cl. 260-2.50b.

Helinski, Edward F., to International Business Machines Corporation. Fluid-operated diaphragm logic devices. 3,680,590, Cl. 137-608.000.

Hell, Rudolf, Dr.-Ing.: *See—*
Koll, Roman, 3,681,650.

Heller, Adam: *See—*
Brecher, Charles; Heller, Adam; and Pappalardo, Romano, 3,681,252.

Helm, Jack D.: *See—*
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Helmerick & Payne, Inc.: *See—*
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Hencey, Thomas R., Jr.: *See—*
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Hendershot, James R.; and Searle, Robert F., to Vibrac Corporation. Magnetic devices. 3,680,671, Cl. 192-21.500.

Henderson, Charles R., to LTV Aerospace Corporation. Harmonic information detection technique. 3,681,528, Cl. 178-6.800.

Henry, Carl L., to Regal Manufacturing Company. Yarn traverse mechanism. 3,680,801, Cl. 242-43.100 .

Hense, Kurt R.: *See—*
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Heppenstall Company: *See—*
Siegwart, Robert V., 3,680,907.

Herbert, John T.; Sullivan, Paul E.; and Vitt, Stanley P., to Lockheed Aircraft Corporation. Flexible joint means. 3,680,895, Cl. 285-167.000.

Hercules Galion Products, Inc.: *See—*
Schwarz, John F., 3,681,569.

Hercules Incorporated: *See—*
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Edwards, Louis J.; Hopkins, Bruce D.; and Rice, Dennis D., 3,680,963.
Gelb, Leonard L., 3,681,185.
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Kruse, Uno; Herman, Daniel F.; and Wilsher, Rudolph S, 3,681,289.

Hermstein, Wolfgang; Mollenbeck, Klaus; and Gericke, Gerhard, to Siemens Aktiengesellschaft. Measuring device for currents in high voltage conductors. 3,681,688, Cl. 324-96.000.

Herrmann, Frederick H. Furniture joint. 3,680,898, Cl. 287-20.92d.

Herrmann, Kurt: *See—*
Ankenbrand, Fritz; Herrmann, Kurt; and Wilke, Werner G., 3,681,138.

Herscovici, Saul, to Deere & Company. Control valve member having vibration damping. 3,680,587, Cl. 137-514.300.

Herz, Jack L.: *See—*
Litt, Morton H.; Lund, Richard B.; Vitrone, John; and Herz, Jack L., 3,681,329.
Litt, Morton H.; Lund, Richard B.; Vitrone, John; Herz, Jack L.; and O'Donnell, Francis C., 3,681,333.

Herz, Luis; Mohr, Reinhard; Mundlos, Eberhard; Mundlos, Eberhard; and Ostermeier, Johann, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Basic oxazine dyestuffs. 3,681,347, Cl. 260-242.000.

Hess, Rudolf; and Engel, Heinz, to Akzona Incorporated. False twisting apparatus. 3,680,302, Cl. 57-34.0hs.

Hessischens Kunststoffwerk Schlerf & Co.: *See—*
Seckelmann, Herbert, 3,680,746.

Hesston Corporation: *See—*
McCanse, James E., 3,680,292.

Hester, Jackson B., Jr., to Upjohn Company, The. 6-Phenyl-s-triazolo[4,3-a][1,4] benzodiazepines. 3,681,343, Cl. 260-239.30t.

Hetrick, Glenn C. Encapsulated fishing lure. 3,680,250, Cl. 43-54.50r.

Hettich, Alfred: *See—*
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Hewlett-Packard Company: *See—*
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Hi-Line Plastics Incorporated: *See—*
Pike, Daniel W., 3,680,495.

Hidaka, Tsuneyoshi; Morita, Akiyoshi; Honjo, Yoshihiko; and Nishimura, Takashi, to Victor Company of Japan, Ltd. Color video signal correction system. 3,681,518, Cl. 178-5.20r.

Higashi, Herbert I.: *See—*
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Higgs, Stuart P. Hydromassage device. 3,680,547, Cl. 128-66.000.
Hill, Friedrich W., to Aga Aktiebolag. Burner unit. 3,680,999, Cl. 431-21.000.
Hill, John Dan, III, to Collins Radio Company. Data loop sychronizing apparatus. 3,681,759, Cl. 340-172.500.
Hindle, Son and Company Limited: *See—*
Hindle, Thomas; and Banks, Vincent Pinder, 3,680,599.
Hindle, Thomas; and Banks, Vincent Pinder, 3,680,602.
Hindle, Thomas; and Banks, Vincent Pinder, 3,680,603.
Hindle, Thomas; and Banks, Vincent Pinder, to Hindle, Son and Company Limited. Looms for weaving. 3,680,599, Cl. 139-1.000.
Hindle, Thomas; and Banks, Vincent Pinder, to Hindle, Son and Company Limited. Looms for weaving. 3,680,602, Cl. 139-76.000.
Hindle, Thomas; and Banks, Vincent Pinder, to Hindle, Son and Company, Limited. Looms for weaving. 3,680,603, Cl. 139-180.000.
Hiney, Leonard L., to Stamets, Wm. K., Company. Lathe. 3,680,413, Cl. 82-2.500.
Hirai, Masuhiko; and Fukushima, Takeo, to Mitsubishi Jukogyo Kabushiki Kaisha. Means for preventing the fluttering and canoeing of strip work. 3,680,756, Cl. 226-97.000.
Hirai, Shoichi: *See—*
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Hiraki, Takayuki, to Pioneer Electronic Corporation. Embedded adapter for turntable. 3,680,872, Cl. 274-39.00b.
Hirata, Itsuro: *See—*
Yagi, Yoshiharu; Kobayashi, Akira; Hirata, Itsuro; and Sato, Hiroshi, 3,681,315.
Hirst, Archie John, to Dunlop Company Limited, The. Vehicle suspensions. 3,680,888, Cl. 280-124.00r.
Hisada, Takeo; Nakajima, Fumio; Nishi, Takeshi; and Sugiyama, Kunro, to Tokico Ltd. Liquid level detecting apparatus. 3,680,579, Cl. 137-81.500.
Hitachi, Ltd.: *See—*
Hojo, Toku; Sasaki, Toshio; Motojima, Hiroshi; and Sasaki, Hideaki, 3,681,171.
Murata, Norio; Takeda, Toshihiko; Sakai, Hirochika; and Matsuda, Nobuyuki, 3,680,653.
Naoi, Keigo; and Otuki, Katumi, 3,681,658.
Nishiyama, Shizuo; and Tanaka, Makoto, 3,681,527.
Ohama, Tsuyoshi; and Iwasaki, Tetsuji, 3,681,118.
Uchino, Koichi; and Inomata, Hiroshi, 3,680,960.
Hiyama, Yoshio; Fujita, Haruo; Tsunetomi, Eiichi; Okada, Kan; and Kude, Satoshi, to Nippon Steel Corporation. Automatic oscillating arc welding method and apparatus. 3,681,564, Cl. 219-125.00r.
Hnilicka, Eugene J.; and Cackley, George W., to Caterpillar Tractor Company. Mid-pitch drive lug for track link of endless track. 3,680,929, Cl. 305-57.000.
Hochlehnert, Franz: *See—*
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Hoffman, Ernest G., to Veeder Industries Inc. Wheel indexing mechanism. 3,680,402, Cl. 74-125.000.
Hoffman, Harry S., Jr.; and Saia, Jerry, to International Business Machines Corporation. Geometric current amplifier. 3,681,623, Cl. 307-297.000.
Hoffman, Jay; and Hohenstein, Robert M., to Singer Company, The, mesne. Three-axis accelerometer. 3,680,392, Cl. 73-516.00r.
Hoffmann, Jorg H.: *See—*
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Hofmann, Horst; Huebner, Erwin; and Katz, Helmut, to Siemens Aktiengesellschaft. Indirectly heated dispenser cathode. 3,681,644, Cl. 313-346.0dc.
Hoge, Henri H., to Rhomega System, Incorporated. Variable frequency control circuit. 3,681,620, Cl. 307-271.000.
Hohenstein, Robert M.: *See—*
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Hojer, Erik: *See—*
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Hojo, Toku; Sasaki, Toshio; Motojima, Hiroshi; and Sasaki, Hideaki, to Hitachi, Ltd. Apparatus for producing a multilayer printed circuit plate assembly. 3,681,171, Cl. 156-382.000.
Holca, Radu, to Gulf Degremont, Inc. R. H. dual media filter. 3,680,701, Cl. 210-80.000.
Holden, Robert B., to United States of America, Atomic Energy Commission. Method and apparatus for determining the carbon activity of fluids. 3,681,026, Cl. 23-230.00r.
Holdt, Donald H., to Chemed Corporation. Automatic boiler blowdown control. 3,680,531, Cl. 122-379.000.
Hollenton, Frank, to AMF Incorporated. Tobacco leaf scanning device. 3,680,360, Cl. 73-37.500.
Holloway, Robert M.: *See—*
Ludington, Robert; and Holloway, Robert M., 3,680,667.
Holloway, Wilbur. Pry bar and nail puller. 3,680,834, Cl. 254-25.000.
Hollstein, Elmer J., to Sun Oil Company. Process for preparing phthalimidines. 3,681,384, Cl. 260-325.000.
Hollstein, Elmer J.; and Scott, Kenneth A., to Sun Oil Company. Preparation of 2-pyrrolidinone. 3,681,387, Cl. 260-326.5fn.
Hollyhead, William Brian: *See—*
Pioli, Alexander Joseph Peter; Hollyhead, William Brian; and Todd, Peter Frank, 3,681,317.
Holmes, Terry M., to Case, J. I., Company. Safety device for mobile cranes. 3,680,714, Cl. 212-145.000.
Holmquest, John C., to Sola Basic Industries, Inc. Controlled power supply with two thyristors. 3,681,678, Cl. 321-18.000.
Holophane Company, Inc.: *See—*
Loch, Charles H., 3,681,591.
Holz, Robert Gustave; and Braun, Adolf, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Devices for detecting and processing vibrations occurring in the moving blades of a rotary compressor or similar apparatus. 3,680,363, Cl. 73-71400.
Honaker, Bernard G., Jr., to Coleman Company, Inc., The. Furnace construction with slidable carriage. 3,680,541, Cl. 126-85.00b.
Honey, Charles C.: *See—*
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Honeywell Information Systems Inc.: *See—*
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Honkasalo, Jorma Bruno: *See—*
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Kabushikikaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.): *See—*
Hayakawa, Osamu, 3,680,962.
Kadokura, Sadao; and Miura Kazuchika, to Teijin Limited. Motor control with pulse comparison means. 3,681,670, Cl. 318-318.000.
Kaiser Aluminum & Chemical Corporation: *See—*
Drawsky, Ronald H., 3,680,530.
Kaiser, Carl; and Zirkle, Charles L., to Smith Kline and French Laboratories. 6-(3-Diloweralkylamino-propyl)-7-(12H)-pleiadenones and salts thereof. 3,681,461, Cl. 260-570.8tc.
Kaiser, Kent: *See—*
Kitchens, Garry C.; Hochstetler, Alan R.; and Kaiser, Kent, 3,681,470.
Kajitani, Tadahiro. Cake stock dispensing apparatus. 3,680,992, Cl. 425-167.000.
Kali-Chemi Aktiengesellschaft: *See—*
Moser, Wilhelm; Ariendorf, B. Honningen; Wirks, Wilhelm; and Ackermann, Karl-Heinz, 3,680,798.
Kali-Chemie Aktiengesellschaft: *See—*
Rudolph, Werner; and Massonne, Joachim, 3,680,289.
Kalwaites, Frank, to Johnson & Johnson. Nonwoven fabric comprising discontinuous large holes connected by fiber bundles defining small holes. 3,681,182, Cl. 161-109.000.
Kalwaites, Frank, to Johnson & Johnson. Nonwoven fabric comprising rosebuds connected by bundles. 3,681,183, Cl. 161-109.000.
Kalwaites, Frank, to Johnson & Johnson. Nonwoven fabrics comprising bamboo, diamond and the like patterns. 3,681,184, Cl. 161-109.000.
Kamberg, Eduard F., to Chicago Dryer Company. Folder construction. 3,680,852, Cl. 270-62.000.
Kamei, Taketo; and Miyazaki, Kouichi, to Tokyo Shibaura Electric Co., Ltd. Glow discharge starter tube with hydrocarbon-rare gas fill. 3,681,639, Cl. 313-151.000.
Kamijo, Terufumi: *See—*
Nagazono, Yasuro; and Kamijo, Terufumi, 3,681,137.
Kamp, Ewald Albert; and Smith, John C., to Union Carbide Corporation. Linear apparatus for the production of non-woven fabrics. 3,680,175, Cl. 19-156.300.
Kanegafuchi Boseki Kabushiki Kaisha: *See—*
Matsui, Masao; Tokura, Susumu; and Yamabe, Masahiro, 3,681,189.
Kaneko, Hidehiko; Yamamoto, Yuzuru; and Kon, Tatsuya, to Dainipon Pharmaceutical Co., Ltd. 17α-Acetoxy-7α-alkylthioprogestenes and production thereof. 3,681,408, Cl. 260-397.4.
Kanning, Donald C., to Klingensmith, Ben C. Gas pressure driven vibratory cylinder construction. 3,680,442, Cl. 091-234.000.
Kanou, Kimio; and Nakamura, Keiichi, to Toyoda Koki Kabushiki Kaisha. Automatic sizing device with linear scale. 3,681,582, Cl. 235-151.320.
Kanto Seiki Kabushiki Kaisha: *See—*
Chigira, Junji, 3,680,325.
Kapelowitz, Robert F. Syringe with multiple compartments. 3,680,558, Cl. 128-218.00m.
Kaplan, Sam H., to Zenith Radio Corporation. Manufacture of a color picture tube. 3,681,111, Cl. 117-33.5.
Karr, Paul F. Door actuated dispenser having bellows as timing means. 3,680,739, Cl. 222-70.000.
Kasak, August: *See—*
Dulis, Edward J.; Kasak, August; and Stasko, William, 3,681,058.
Kasten, Walter, to Bendix Corporation, The. Noise muffler having a unique pressure safety valve. 3,680,659, Cl. 181-36.00a.
Kato, Takaaki: *See—*
Sumiyoshi, Masaharu; Ito, Osamu; Wakamatsu, Hisato; Kato, Takaaki; and Kawai, Hisasi, 3,680,410.
Kato, Toshio: *See—*
Genma, Susumu; Kuroda, Akio; Kato, Toshio; and Kishi, Fusao, 3,681,225.
Katz, Helmut: *See—*
Hofmann, Horst; Huebner, Erwin; and Katz, Helmut, 3,681,644.
Katz, Helmut, to Siemens Aktiengesellschaft. Cathode with dot-shaped emission. 3,681,641, Cl. 313-336.000.
Katz, Ira; Wilson, Richard A.; and Giacino, Christopher, to International Flavors & Fragrances Inc. Novel flavoring compositions utilizing thiazo derivatives. 3,681,088, Cl. 99-140.00r.
Kawaguchi, Tadashi: *See—*
Iwao, Norito; Naito Koichiro; Kawaguchi, Tadashi; Maeda, Minoru; and Norita, Toshihito, 3,681,052.
Kawai, Hisasi: *See—*
Sumiyoshi, Masaharu; Ito, Osamu; Wakamatsu, Hisato; Kato, Takaaki; and Kawai, Hisasi, 3,680,410.
Kawai, Shinji, to Kelsey-Hayes Company. Hydraulic braking pressure control system having valve responsible to the oil pressure deviation for vehicles. 3,680,922, Cl. 303-6.00c.
Kawakami, Eiichi, to Aisin Seiki Kabushiki Kaisha. Coupling member. 3,680,900, Cl. 287-93.000.
Kawakami, Kiminari; and Yamagishi, Shizunao, to Nippon Kokan Kabushiki Kaisha. Aluminium killed-steel. 3,681,057, Cl. 75-124.000.
Kawano, Takuo, to Moon Bat Kabushiki Kaisha. Fasteners for attaching clothes to ribs of umbrellas. 3,680,178, Cl. 24-73.0pf.
Kawashima, Isao: *See—*
Matsuda, Ryoichi; Kawashima, Isao; and Terai, Masaaki, 3,681,538.
Kazansky, Vasily Leonidovich: *See—*
Nekrasov, Nikolai Nikolaevich; Blinchikov, Alexandr Lvovich; Kazansky, Vasily Leonidovich; Besedin, Alexandr Fedorovich; Krikunenko, Anatoly Filippovich; Makarov, Egor Maximovich; Zemskov, Alexei Lavrentievich; Afinogenov, Fridrikh Ivanovich; Kirichenko, ergei Pavlovich; and Kulikov, Alexei Andreevich, 3,681,003.
KDI Sealtron Corporation, mesne: *See—*
Newman, Albert P., 3,681,742.
Kearfott, Arman L., to General Motors Corporation. Gear testing device. 3,680,373, Cl. 73-162.000.
Keck, Karl M. Safety razor with blade aligning means. 3,680,211, Cl. 30-75.000.
Kefalas A/S: *See—*
Petersen, Povl Viggo; and Ammitzboll, Thorkil, 3,681,346.
Kelkheim, Taunus: *See—*
Radscheit, Kurt; Kelkheim, Taunus; Stache, Ulrich; Haede, Werner; Hofheim, Taunus; Fritsch, Werner; Neuenhain, Taunus; and Lindner, Ernst, 3,681,344.
Keller, Harold A.; and Young, Patrick J., to Potlatch Forests, Inc. Apparatus for automatically laying up plywood panels. 3,681,174, Cl. 156-559.000.
Kellogg, Lillian M., to Eastman Kodak Company. Photographic processes. 3,681,077, Cl. 96-107.000.
Kelly, David John, to Scott Paper Company. Non-burning, intumescent flexible polyurethane foam. 3,681,273, Cl. 260-2.5aj.
Kelly, William F.: *See—*
Russell, Lewis B.; and Kelly, William F., 3,681,773.
Kelly, William J.; and Reynolds, Warren A., to Cogar Corporation. Tape channel switching circuit. 3,681,699, Cl. 328-143.000.
Kelsey-Hayes Company: *See—*
Kawai, Shinji, 3,680,922.
Rozmus, Walter J.; and Rozmus, Matt T., 3,680,761.
Kensil, Charles E.: *See—*
McKee, Herbert A.; Kensil, Charles E.; and Udell, Walter B., 3,680,156.
Kent, Cecil, to Creators Limited. Decorative plastics strips and extrusions. 3,681,180, Cl. 161-5.000.
Kent, Roger E., to National Dust Collector Corporation. Gas scrubber. 3,680,282, Cl. 55-233.000.
Keppel, Charles M.; and Weiss, Irwin K., to General Motors Corporation. Vehicle passive occupant restraining belt arrangement. 3,680,883, Cl. 280-150.0sb.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Dieck, Enoui Leopold, 3,681,194.

Kerr, Edward L. Domino-like game pieces. 3,680,866, Cl. 273-137.00d.

Kerr-McGee Corporation: *See*—
Mills, Loring E.; Marler, James V.; and Buntz, Billie J., 3,680,690.

Kerwood, Joseph E.: *See*—
Coran, Aubert Y.; Kerwood, Joseph E.; and Trivette, Chester D., Jr., 3,681,356.

Keshi, Akizo: *See*—
Yokoo, Makoto; Keshi, Akizo; Hashimoto, Norishige; and Nakahara, Shigenobu, 3,681,271.

Kesting, Lorenz. Apparatus for manufacture of concrete buildings. 3,680,824, Cl. 249-13.000.

Keur, Robert I., to Dick, A. B., Company. Phasing of ink drop charging. 3,681,778, Cl. 346-75.000.

KEV Electronics Corporation: *See*—
Chizinsky, George, 3,681,220.

Keystone Valve Corporation: *See*—
McNeely, Branch M., Jr., 3,680,833.

Khan, Obaidur Rahman, to McCord Corporation, mesne. Liquid castable elastomers. 3,681,291, Cl. 260-77.5aq.

Kibbel, William H., Jr.; and O'Neill Eugene T., to FMC Corporation. Manufacture of stable hydrogen peroxide solutions. 3,681,022, Cl. 23-207.500.

Kiehs, Karl; Koenig, Karl-Heinz; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. 2,6-Dinitro-4-trifluoromethylanilines. 3,681,425, Cl. 260-465.00e.

Kim, Charles W., to Hercules Incorporated. Blending continuous filament yarns. 3,680,303, Cl. 57-157.00r.

Kim, Yung Ki: *See*—
Pierce, Ogden R.; and Kim, Yung Ki, 3,681,418.

Kimball Piano & Organ Co.: *See*—
Slaats, Mathew A.; and Blessinger, James E., 3,681,507.

Kimura, Osamu: *See*—
Sagawa, Seiji; Kunihiro, Haruo; Kimura, Osamu; and Inoue, Masatoshi, 3,681,371.

Kimura, Shiro; Kobayashi, Teruo; and Ishige, Sadao, to Fuji Photo Film Co., Ltd. Fluoran compounds. 3,681,392, Cl. 260-335.000.

Kine, Masayoshi. Disk brake for a bicycle. 3,680,663, Cl. 188-24.000.

King, Robert W., to Copeland Corporation, mesne. Porting arrangement for rotary machine. 3,680,988, Cl. 418-61.000.

Kinjo, Hisao: *See*—
Wada, Yoshiyo; Kinjo, Hisao; Takashima, Seiichi; and Akuwa, Fumio, 3,681,525.

Kinkade, Robert G.: *See*—
Allen, Charles A.; Andersen, Stanley R.; Kinkade, Robert G.; Kwei, Thomas; and Robinson, Richard H., 3,681,757.

Kinnavy, James W., to Continental Can Company, Inc. Dispensing container with plural closures. 3,680,740, Cl. 222-129.000.

Kinnicutt, Roger, Jr., to Morgan Construction Company. Slant disc entry guide. 3,680,758, Cl. 226-183.000.

Kinzler, Johann: *See*—
Vogl, Willibald; Kinzler, Johann; and Goessl, Gottfried, 3,681,612.

Kirichenko, Sergei Pavlovich: *See*—
Nekrasov, Nikolai Nikolaevich; Blinchikov, Alexandr Lvovich; Kazansky, Vasily Leonidovich; Besedin, Alexandr Fedorovich; Krikunenko, Anatoly Flilippovich; Makarov, Egor Maximovich; Zemskov, Alexei Lavrentievich; Afinogenov, Fridrikh Ivanovich, Kirichenko, Sergei Pavlovich; and Kulikov, Alexei Andreevich, 3,681,003.

Kirk, Merritt C., Jr.: *See*—
Mills, Ivor W.; Dimeler, Glenn R.; and Kirk, Merritt C., Jr., 3,681,279.

Kirn, Manfred; Hahner, Reinhard; Stroezel, Reinhold; Hettich, Alfred; and Burklin, Max, to Bosch, Robert GmbH. Variable speed percussion drilling machine. 3,680,642, Cl. 173-13.000.

Kirschner, Peter: *See*—
Dohring, Ekkehard; and Kirschner, Peter, 3,680,408.

Kiscaden, Roy W.; and Yannone, Robert A., to Westinghouse Electric Corporation. Pneumatic overspeed protective system. 3,680,572, Cl. 137-49.000.

Kishi, Fusao: *See*—
Genma, Susumu; Kuroda, Akio; Kato, Toshio; and Kishi, Fusao, 3,681,225.

Kishi, Masanori: *See*—
Yano, Noburnitsu; Fukushima, Masao; Fukinbara, Itaru; and Kishi, Masanori, 3,681,374.

Kishikawa, Toshiro: *See*—
Doi, Yoshikazu; Kishikawa, Toshiro; and Nomura, Hiroshi, 3,681,521.

Kitaura, Kouichi, to Mitsubishi Denki Kabushiki Kaisha. Product/quotient deriving system. 3,681,586, Cl. 235-195.000.

Kitchell, Barbara S.; and Gerzon, Koert, to Lilly, Eli, and Company. Adducts of aliphatic and araliphatic aldehydes and erythromycylamine or erythromycyl B amine. 3,681,322, Cl. 260-210.00e.

Kitchen, John P.: *See*—
Slominski, Walter V.; Kitchen, John P.; and Mandusky, Jack C., 3,680,157.

Kitchens, Garry C.; Hochstetler, Alan R.; and Kaiser, Kent, to Givaudan Corporation. Acid isomerization of thujopsene and novel tricyclic olerinic $C_{15}H_{24}$ hydrocarbons formed thereby. 3,681,470, Cl. 260-666.0py.

Kiwak, Robert S., to Bendix Corporation, The. Bonded metal structure having intricate passages formed therein, and a method of making said structures. 3,680,576, Cl. 137-81.500.

Klasic, Mladen, to Uljanik brodogradiliste i tvornica Dizel motora Pula u sastavu zdruzenog produzeca "Jadranbrod". Ship stern fitted with twin-screw propulsion. 3,680,513, Cl. 114-57.000.

Kleiner, Eduard, to Ciba-Geigy Corporation. Hindered phenolic esters of cyclic amino carboxylic acids. 3,681,358, Cl. 260-268.000.

Klemenhagen, Dale A., to Toro Manufacturing Corporation. Reel mower blade adjustment. 3,680,293, Cl. 56-249.000.

Klingensmith, Ben C.: *See*—
Kanning, Donald C., 3,680,442.

Klose, Gerhard: *See*—
Fowler, William Frank, Jr.; and Klose, Gerhard, 3,681,127.

Klosterhuber, Robert: *See*—
Eyb, Wolfgang; and Klosterhuber, Robert, 3,680,654.

Klotmann, Georg: *See*—
Pommer, Horst; Seid, Bernhard; Nuerrenbach, Axel; Klotmann, Georg; and Grassner, Hans, 3,681,466.

Klygis, M. Julius, to Illinois Tool Works Inc. Container carrier and spout. 3,680,905, Cl. 294-31.200.

Knapp, Heinrich: *See*—
Eckert, Konrad; Knapp, Heinrich; Schwartz, Reinhard; and Schuster, Greogor, 3,680,535.
Romann, Peter; Knapp, Heinrich; and Fussner, Paul, 3,680,794.

Knauff, Karl-Georg, to U.S. Philips Corporation. Iron nitride, Fe_4N, as a material for magnetic recording and method of manufacturing same. 3,681,018, Cl. 23-191.000.

Knock & Associates, mesne: *See*—
Sparks, Harold R., 3,680,619.

Knowles, Frederick G., to Eastman Kodak Company. Apparatus for handling image-bearing mediums. 3,680,952, Cl. 353-27.000.

Knowles, Robert G.: *See*—
Scaminaci, James, Jr.; and Knowles, Robert G., 3,680,193.

Knupfer, Hans; and Schellhammer, Carl-Wolfgang, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of 3-substituted 7-amino-courmarins. 3,681,397, Cl. 260-343.20r.

Kobayashi, Akira: *See*—
Yagi, Yoshiharu; Kobayashi, Akira; Hirata, Itsuro; and Sato, Hiroshi, 3,681,315.

Kobayashi, Hisanori: *See*—
Suda, Toshi; and Kobayashi, Hisanori, 3,680,537.

Kobayashi, Isamu, to Sony Corporation. Semiconductor device and a method of making the same. 3,681,668, Cl. 317-235.00r.

Kobayashi, Teruo: *See*—
Kimura, Shiro; Kobayashi, Teruo; and Ishige, Sadao, 3,681,392.

Kobayashi, Tunekazu: *See*—
Masuda, Noboru; and Kobayashi, Tunekazu, 3,681,733.
Masuda, Noboru; and Kobayashi, Tunekazu, 3,681,735.
Masuda, Noboru; and Kobayashi, Tunekazu, 3,681,736.

Koch, Peter, to United States of America, Agriculture. Process for steam straightening and kiln drying lumber. 3,680,219, Cl. 34-13.400.

Koeber, Henry J., to Bell & Howell Company. Two-speed take-up drive for camera. 3,680,813, Cl. 242-205.000.

Koegel, James H., to Robertshaw Controls Company. Adjustable acceleration responsive solid state control circuit. 3,681,661, Cl. 317-22.000.

Koenig, Karl-Heinz: *See*—
Kiehs, Karl; Koenig, Karl-Heinz; and Fischer, Adolf, 3,681,425.

Koeppler, John A.: *See*—
Lehman, Lewis M.; and Koeppler, John A., 3,681,553.

Koerner, William B.: *See*—
Thompson, Dallas Glenn, 3,680,168.

Kogyo Gijutsuin; a/k/a "Agency of Industrial Science and Technology, Ministry of International Trade and Industry, Japanese Government': *See*—
Mori, Ryoichi; Tajima, Hiroaki; and Tsuji, Yoshio, 3,681,616.

Kohl, Willibald F.; and Ellinger, Rudolph H., to Stauffer Chemical Company. Method of preserving food materials, food product resulting therefrom, and preservative composition. 3,681,091, Cl. 99-150.000.

Kohlmuller, Hans; and Kuhl, Dieter, to Siemens Aktiengesellschaft. Fuel cell battery for reacting a reactant, such as hydrazine especially, dissolved in electrolyte. 3,681,145, Cl. 136-86.00r.

Kohn, Edward M.: *See*—
Jolly, Samuel E.; Kohn, Edward M.; and Tench, John D., 3,681,117.

Kohn, Marvin Lee: *See*—
Blum, Bernard Saul; and Kohn, Marvin Lee, 3,680,197.

Kojima, Kenko: *See*—
Yagi, Eiichi; Kojima, Kenko; Ikeda, Hisayuki; Yauchi, Shiro; Shimizu, Tsutomu; Tamalate, Tokutaro; and Ikegawa, Hiroyuki, 3,680,841.

Kokosa, Richard A., to General Electric Company. Controlled rectifier and triac with laterally off-set gate and auxiliary segments for accelerated turn on. 3,681,667, Cl. 317-235.00r.

Kolb, Carl A., to Pfizer Inc. Esterification process for the preparation of diethylaminoethyl p-nitrobenzoate. 3,681,430, Cl. 260-472.000.

Kolb, Karl H.: *See*—
Laurent, Henry; Kolb, Karl H.; and Wiechert, Rudolf, 3,681,405.

Koll, Roman, to Hell, Rudolf, Dr.-Ing. Method for the rastered reproduction of half-tone pictures. 3,681,650, Cl. 315-30.000.

Kollodzeiski, Norbert: *See*—
von der Eltz, Hans-Ulrich; and Kollodzeiski, Norbert, 3,681,005.

Kolly, Andre, to Kabushiki Kaisha Ricoh. Transfer and reset device for calculating machines. 3,681,576, Cl. 235-133.00r.

Komatsu, Noboru: *See—*
Kusunoki, Kaneyoshi; Asakura, Tatsumi; Nakakawa, Masahiro; Komatsu, Noboru; and Arai, Tohru, 3,680,626.

Komhyr, Walter D. Electrochemical concentration cell for gas analysis. 3,681,228, Cl. 204-195.00r.

Kon, Tatsuya: *See—*
Kaneko, Hidehiko; Yamamoto, Yuzuru; and Kon, Tatsuya, 3,681,408.

Kondo, Kenshi. Automatic soldering apparatus. 3,680,762, Cl. 228-37.000.

Konig, Johann: *See—*
Ruschig, Heinrich; Duwel, Dieter; Konig, Johann; and Loewe, Heinz, 3,681,458.

Konig, Klaus: *See—*
Traubel, Harro; and Konig, Klaus, 3,681,125.

Konstan: *See—*
Horbach, Edwin, 3,680,645.

Kookaburra Retread Equipment Pty. Limited: *See—*
Wood, Samuel Robert, 3,680,185.

Kopec, Conrad J.: *See—*
Goodboy, George O., Jr.; Green, Donald W.; and Kopec, Conrad J., 3,680,320.

Koppers Company, Inc.: *See—*
Haas, James P., 3,680,856.

Korinek, Dennis J.: *See—*
Korinek, James L.; and Korinek, Dennis J., 3,680,524.

Korinek, James L.; and Korinek, Dennis J. Mailbox flag-trip mechanism. 3,680,524, Cl. 116-132.000.

Korner, Gerhard: *See—*
Schmitz, Wolfgang; and Korner, Gerhard, 3,681,549.

Kornick, Abraham, to Reynolds Industries, Inc. Sealed coaxial cable connector. 3,681,739, Cl. 339-94.00c.

Korolkova, Galina Sergeevna: *See—*
Gridunov, Ivan Tikhonovich; Unkovsky, Boris Vladimirovich; Donskaya, Marina Maiorovna; Andreev, Leonid Vladimirovich; Korolkova, Galina Sergeevna; Ignatova, Ljudmila Alexandrovna; and Grigorian, Alexandr Grigorievich, 3,681,278.

Koskinen, Kauno. Pliers. 3,680,351, Cl. 72-409.000.

Kotoc, Stefan, to Ustav pro vyzkum motorovych vozidel. Reaction motor including air flow inducing means. 3,680,317, Cl. 60-269.000.

Kott, Alan C.: *See—*
Staudacher, Gerald R.; Lane, George A.; and Kott, Alan C., 3,680,483.

Kottmeier, Merrill F.: *See—*
Happ, George M.; and Kottmeier, Merrill F., 3,680,705.

Kotzbauer, Judith M., to Allergan Pharmaceuticals. Bactericidal stabilized ascorbic acid composition. 3,681,492, Cl. 424-141.000.

Kozacka, Frederick J., to Chase-Shawmut Company, The. Cartridge fuse with outer casing and overload interrupting chamber formed by inner sub-casing. 3,681,731, Cl. 337-166.000.

Kozik, Andrew F.: *See—*
Dhaka, Vir A.; and Kozik, Andrew F., 3,681,147.

Kozul, Theodore L.; and Crandell, Paul A., to Baytron Co., Inc. Millimeter wave translating device with changeable insert element. 3,681,718, Cl. 333-97.00r.

Krafft, Joseph M., to United States of America, Navy. Multispeciman fatigue cracking machine. 3,680,367, Cl. 73-100.000.

Kraft, Hans-Gunther: *See—*
Irmscher, Klaus; Cimbollek, Gerhard; Kraft, Hans-Gunther; and Harting, Jurgen, 3,681,409.

Krakauer, Edwin G. Safety lock. 3,680,337, Cl. 70-419.000.

Kraschnewski, Melvin W.; and Stoldt, Erwin F., to Bucyrus-Erie Company. Tread belt drive. 3,680,928, Cl. 305-57.000.

Krasnev, Tibor Ferentsevich: *See—*
Lifshits, Viktor Senderovich; Andrianov, Vladimir Rubenovich; Rykalin, Nikolai Nikolaevich; Rykalin, Nikolai Nikolaevich; Krasnev, Tibor Ferentsevich; Podola, Nikolai Vasilievich; and Krivonos, Vadim Petrovich, 3,681,563.

Krastchew, Christoslaw. Cooling arrangement for a dynamoelectric machine. 3,681,628, Cl. 310-54.000.

Krause, Bernhard: *See—*
Burian, Theodor; and Krause, Bernhard, 3,681,534.

Krause, Werner A.: *See—*
Johnston, Frank C.; and Krause, Werner A., 3,681,509.

Kravitz, Bernard L., to Dionics, Incorporated. Method of producing air-isolated integrated circuits. 3,680,205, Cl. 29-578.000.

Kriellaars, Johannes C.: *See—*
Tarry, Robert James; Kriellaars, Johannes C.; and Lord, Ronald D., 3,681,685.

Krikunenko, Anatoly Flilippovich: *See—*
Nekrasov, Nikolai Nikolaevich; Blinchikov, Alexandr Lvovich; Kazansky, Vasily Leonidovich; Besedin, Alexandr Fedorovich; Krikunenko, Anatoly Flilippovich; Makarov, Egor Maximovich; Zemskov, Alexei Lavrentievich; Afinogenov, Fridrikh Ivanovich; Kirichenko, ergei Pavlovich; and Kulikov, Alexei Andreevich, 3,681,003.

Krivonos, Vadim Petrovich: *See—*
Lifshits, Viktor Senderovich; Andrianov, Vladimir Rubenovich; Rykalin, Nikolai Nikolaevich; Rykalin, Nikolai Nikolaevich; Krasnev, Tibor Ferentsevich; Podola, Nikolai Vasilievich; and Krivonos, Vadim Petrovich, 3,681,563.

Kroos, Friedrich-Karl, to Siemens Aktiengesellschaft. ECL gate switching network. 3,681,614, Cl. 307-203.000.

Kroy, Walter: *See—*
Erben, Klaus Dieter; Kroy, Walter; and Mehnert, Walter E., 3,681,687.

Krueger, Paul C., to Air Products and Chemicals, Inc., mesne. Preparation of inorganic polymers. 3,681,265, Cl. 260-2.00p.

Krusche, Kurt; and Zimmermann, Hubert, to Allstar Verbrauchsgueter GmbH & Co., KG. Fabric brush. 3,680,169, Cl. 15-171.000.

Kruse, Uno; Herman, Daniel F.; and Wilsher, Rudolph S, to N L Industries, Inc. Clear coating system comprising an isocyanate cured terpolymer. 3,681,289, Cl. 260-77.5cr.

Kubo, Moritada; Shigehara, Masamichi; and Yasui, Shozo, to Tokyo Shibaura Electric Co., Ltd. Device for controlling the attitude of a space satellite utilizing geomagnetic field. 3,681,583, Cl. 235-150.200.

Kubo, Seitoku: *See—*
Ito, Shin; and Kubo, Seitoku, 3,680,411.

Kude, Satoshi: *See—*
Hiyama, Yoshio; Fujita, Haruo; Tsunetomi, Eiichi; Okada, Kan; and Kude, Satoshi, 3,681,564.

Kudelski, Stefan. Variable, nonlinear impedance. 3,681,625, Cl. 307-321.000.

Kuhl, Dieter: *See—*
Kohlmuller, Hans; and Kuhl, Dieter, 3,681,145.

Kuhn, Max: *See—*
Scheidweiler, Andreas; Muller, Peter; and Kuhn, Max, 3,681,603.

Kuhnis, Hans Herbert; and Renner, Ulrich. Pharmaceutical compositions and method for producing a depressant effect on the central nervous system with piperidyl butanones. 3,681,501, Cl. 424-267.000.

Kuibyshevsky Filial nauchnoissledovatel skogo instituta neftepererabatyva juschei Promyshlennosti: *See—*
Nekrasov, Nikolai Nikolaevich; Blinchikov, Alexandr Lvovich; Kazansky, Vasily Leonidovich; Besedin, Alexandr Fedorovich; Krikunenko, Anatoly Flilippovich; Makarov, Egor Maximovich; Zemskov, Alexei Lavrentievich; Afinogenov, Fridrikh Ivanovich; Kirichenko, ergei Pavlovich; and Kulikov, Alexei Andreevich, 3,681,003.

Kuiper, Adrianus, to U.S. Philips Corporation, mesne. Indirectly heated disk-like cathode. 3,681,642, Cl. 313-337.000.

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Kunihiro, Haruo: *See—*
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Kunstharsfabriek Synthese N.V.: *See—*
Geerdes, Dirk J.; and Van Vessem, Cornelis J., 3,680,362.

Kunz, Max, to Ruti Machinery Works, Ltd. Drive arrangement for a feed roller on a loom. 3,680,598, Cl. 139-1.000.

Kurath, Paul; Egan, Richard Stephan; and Jones, Peter Hadley, to Abbott Laboratories. 6,9-Oxygen bridged erythromycin derivatives. 3,681,323, Cl. 260-210.00e.

Kurbi & Niggeloh: *See—*
Meinunger, Helmut, 3,680,455.

Kurita, Masaru; Saito, Yoshihisa; and Teraji, Tsutomu, to Fujisawa Pharmaceutical Co., Ltd. Sydnone derivatives of 7-aminocephalosporanic acids. 3,681,328, Cl. 260-243.00c.

Kuroda, Akio: *See—*
Genma, Susumu; Kuroda, Akio; Kato, Toshio; and Kishi, Fusao, 3,681,225.

Kurrle, Charles R. Adjustable V-belt assembly. 3,680,380, Cl. 74-234.000.

Kurtz Enterprises, Inc.: *See—*
Kurtz, Thomas D., 3,680,822.

Kurtz, Thomas D., to Kurtz Enterprises, Inc. Floor to ceiling wall mirror fastening clip. 3,680,822, Cl. 248-475.000.

Kusaka, Yoshimi: *See—*
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Kusumi, Masami. Plant cultivating device. 3,680,256, Cl. 47-34.110.

Kusunoki, Kaneyoshi; Asakura, Tatsumi; Nakakawa, Masahiro; Komatsu, Noboru; and Arai, Tohru, to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho. Corrosion-resistant surface coating for use in the casting of aluminum and aluinum alloys. 3,680,626, Cl. 164-138.000.

Kutik, Louis F.; and Gronemeyer, Erich W. Pump with mechanical assist. 3,680,986, Cl. 417-520.000.

Kvaerner Brug AS: *See—*
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Kwei, Thomas: *See—*
Allen, Charles A.; Andersen, Stanley R.; Kinkade, Robert G.; Kwei, Thomas; and Robinson, Richard H., 3,681,757.

Kweller, Esher R.; Staats, William R.; and Rosenberg, Robert B., to Institute of Gas Technology, The. Self-igniting burners. 3,681,002, Cl. 431-268.000.

Laboratoires OM, S.A.: *See—*
Esteve-Subirana, Antonio; and Coutellier, Chislain, 3,681,503.

L'Air Liquide Societe Anonyme Pour l'Etude et l'Exploitation des Procedes: *See—*
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Lambe, Keith Albert Dale: *See—*
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Lamster, Hal Bernhard: *See—*
Stone, John Alexander; Lamster, Hal Bernhard; Baker, Charles L.; and Bakiras, Sprio, 3,681,755.

Lancaster, James Kenneth; and Yates, David William, to Caludon Engineering Company Limited. Machine tool having rotary and indexible work table. 3,680,439, Cl. 90-15.100.

Landen, William James, to Eyelet Specialty Company. Container construction for a safety closure. 3,680,745, Cl. 222-570.000.

Lander, Max. Combined drum-guitar musical instrument. 3,680,423, Cl. 84-170.000.

Landmesser, Karl, Jr.: *See—*
Roberts, John F., 3,681,589.

Landoni, Giannino. Multineedle quilting machine. 3,680,507, Cl. 112-118.000.

Landwehrkamp, Hans, to Schubert & Salzer. Process and apparatus for fiber band spinning. 3,680,300, Cl. 57-34.00r.

Lane, George A.: *See—*
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Lang, John N.: *See—*
Fischer, Harry F., Jr.; and Lang, John N., 3,680,269.

Lange, Karl-Heinz, to Balda-Werke. Cameras with mechanically ignited flashcubes. 3,680,454, Cl. 95-11.00l.

Langley, Robert E., to Snorkel Fire Equipment Company. Fluipower device. 3,680,713, Cl. 212-35.0hc.

Lanham, William E.; Miller, Gene C.; and Lanham, William E., Jr. Conveyor system. 3,680,493, Cl. 107-57.00c.

Lanham, William E., Jr.: *See—*
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Lanier, Eldred S., Jr.: *See—*
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Larka, Vincent E., to GTE Laboratories Incorporated. Object detection apparatus. 3,681,750, Cl. 340-16.00r.

Larsen, Arthur Bertel; Sosnowski, Thomas Patrick; and Townsend, Richard Lee, Jr., to Bell Telephone Laboratories, Incorporated. Single-tube color cameras with optical spatial frequency filters. 3,681,519, Cl. 178-5.0st.

Larson, Donald J.: *See—*
Hufeld, John L.; Larson, Donald J.; Marsden, Howard A.; Mueller, James P.; and Norick, William B., 3,680,588.

Lary, Edmund C.; and Meyerand, Russell G., Jr., to United Aircraft Corporation. Gas laser. 3,681,710, Cl. 331-94.500.

Latrobe Steel Company: *See—*
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Lau Incorporated: *See—*
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Laurent, Henry; Kolb, Karl H.; and Wiechert, Rudolf, to Schering Aktiengesellschaft. Novel 21,21-dichlorosteroids. 3,681,405, Cl. 260-397.300.

Laussermair, Friedrich; and Ziemer, Albrecht, to Maschinenfabrik Ausburg-Nurnberg, A.G. High speed roller bearing. 3,680,934, Cl. 308-212.000.

Lawrence, Ray V.: *See—*
Bunk, Albert R.; Bennett, Bailey; Berry, David A.; Halbrook, Noah J.; Schuller, Walter H.; and Lawrence, Ray V., 3,681,268.

Le Barre, Stuart David. Traffic control system and bidirectional sign therefor. 3,681,751, Cl. 340-22.000.

Le Tourneau, R. G., Inc.: *See—*
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Le Velle, James A.: *See—*
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Leatherman, Cleown A.: *See—*
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Lebreuil, Jean-Claude Gaston Clement. Helicoidal vibrating ramp handling apparatus. 3,680,683, Cl. 198-220.0bc.

Ledford, Nathan Dale, to Velsicol Chemical Corporation. Process for the production of para-chlorobenzoic acid. 3,681,446, Cl. 260-524.00r.

Lee, Charles Arthur. Magnetic receptacle for keys and the like. 3,680,338, Cl. 70-456.000.

Lee, Charles D., Jr., to Parks-Cramer Company. Yarn piecing apparatus data communicating means and method. 3,680,297, Cl. 57-34.00r.

Lee, Charles D., Jr., to Parks-Cramer Company. Textile yarn production control apparatus and method. 3,680,299, Cl. 57-34.00r.

Lee, Cheuk Man, to Abbott Laboratories. Certain pyridylalkyl derivatives of 2-amino-5-phenyl-2-oxazolin-4-ones. 3,681,367, Cl. 260-295.0am.

Lee, Kenneth, to International Business Machines Corporation. EuO films with enhanced magnetic exchange. 3,681,245, Cl. 252-62.550.

Lee, Norman C., to Carolina Enterprises, Inc. Candelabrum and light transmitting means therefor. 3,681,588, Cl. 240-10.00b.

Lee, Richard J., to Standard Oil Company (Indiana). Alkane hydroxy amines and the method of preparing the same. 3,681,463, Cl. 260-584.00r.

Lee-Norse Company: *See—*
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Leeds & Northrup Company: *See—*
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Leemhuis, Rudolph E. Legless ironing board. 3,680,235, Cl. 38-104.000.

Lefdegard, Sixten Harald, to Bultfabriks Aktiebolaget. Method particularly for making studs for vehicle tires and the like. 3,680,195, Cl. 29-432.100.

Leger, Andre, to Automobiles Peugeot and Regie Nationale des Usines Renault. Lock control device for a compression-ignited internal combustion engine. 3,680,656, Cl. 180-114.000.

Lehman, Lewis M.; and Koeppler, John A., to Square D Company. Switch adapter structure for a dust-ignition-proof enclosure. 3,681,553, Cl. 200-168.00g.

Lehmann, Karl Friedrich; and Weygant, Robert Miller, to American Can Company. Sheet feed mechanism. 3,680,679, Cl. 198-104.000.

Lehneis, Hans R.; and Pounders, Jack D., to Research Corporation. Spiral orthosis for the lower extremity. 3,680,549, Cl. 128-80.00e.

Lehnen, Josef P.: *See—*
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Leigh, Thomas; and Todd, Alexander Henry, to Imperial Chemical Industries Limited. 2-Aryloxyalkylpiperazine derivatives. 3,681,359, Cl. 260-268.0bc.

Leimgruber, Willy; and Weigele, Manfred, to Hoffmann-La Roche Inc. 1-Hydroxy-6-amino alkoxy-phenazine 5,10-dioxides. 3,681,331, Cl. 260-247.50r.

Leinkram, Charles Z., to United States of America, Navy. Process for bonding chip devices to hybrid circuitry. 3,680,196, Cl. 29-473.100.

Lelyk, William; and Stepanek, Frank E., to American Home Products Corporation. Container closure. 3,680,731, Cl. 220-55.0an.

Lembo, Sabino: *See—*
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Lemieux, Roger Joseph, to Northern Electric Company Limited. Filled cable core with foraminous core wrap. 3,681,510, Cl. 174-23.00r.

Lemper, Herbert; and Snee, William J., Jr., to Mesta Machine Company. Force-multiplying mechanisms. 3,680,400, Cl. 74-89.150.

Leonard, John E.; and Watanabe, Hideo, to International Biophysics Corporation. Metal-metal salt electrodes and process. 3,681,136, Cl. 117-230.000.

Lerman, Harold: *See—*
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Bloch, Herman S.; Illingworth, George E.; and Lester, George W., 3,681,442.

Lester, Russell H., Jr., to North American Door Corporation. Power-transmitting mechanism for side-coiling door. 3,680,622, Cl. 160-25.000.

Levek, Robert P.: *See—*
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LeVoy's Inc.: *See—*
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Levy, Edward M., to Chemtrust Industries Corporation. Mobile cleaning apparatus. 3,680,786, Cl. 239-146.000.

Levy, Joseph Peppo, to Sperry Rand Limited. Catalyst for electroless plating. 3,681,257, Cl. 252-430.000.

Lewis, Bernard L.; and MacDowell, James E., to MacDowell Associates, Inc. Retroflector dipole antenna array and method of making. 3,681,771, Cl. 343-817.

Lewis, Sheldon N.; and Miller, John J., to Rohm and Haas Company. Method of coating a fabric or textile with copolymers of monounsaturated or diunsaturated polyesters with vinyl monomers. 3,681,108, Cl. 117-33.000.

Liberty Combustion Corporation: *See—*
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Lichte, Norbert, to Rafi, Raimund Finsterholzi Elektrotechnische Spezialfabrik, Firma. Holder for electrical lamps with a glass base cap. 3,681,741, Cl. 339-170.000.

Liebegott, Hans-Peter: *See—*
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Lieberman, Abraham Buddy. Method of combining fluid components to continuously produce polyurethane foam. 3,681,485, Cl. 264-47.000.

Lieberman, Emanuel R.: *See—*
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Lieberman, Morton L., to Corning Glass Works. Amorphous bismuth oxide containing coatings. 3,681,109, Cl. 117-33.300.

Lifshits, Viktor Senderovich; Andrianov, Vladimir Rubenovich; Rykalin, Nikolai Nikolaevich; Rykalin, Nikolai Nikolaevich; Krasnev, Tibor Ferentsevich; Podola, Nikolai Vasilievich; and Krivonos, Vadim Petrovich. Continuous flash-off resistance butt-welding. 3,681,563, Cl. 219-97.000.

Lightner, Gene E., to Hewlett-Packard Company. Fluid flow meter. 3,680,377, Cl. 73-204.000.
Lilly, Eli, and Company: *See—*
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Lin, Chao-Han, to National Cash Register Company, The. Dialkylamino fluoran chromogenic compounds. 3,681,390, Cl. 260-335.000.
Lin, Kingso Chingtsung, to Hooker Chemical Corporation. Catalytic addition of compounds having a p-h bond to acetylene. 3,681,481, Cl. 260-970.000.
Lincoln, Roland L., to Fuller Company. Liquid spray nozzle. 3,680,781, Cl. 239-431.000.
Lindberg, Bernt Jabes, to Aktiebolaget Pharmacia. Amine addition salts of 5-[p-(2-pyridylenlfamyl)-phenylazo]-salicyclic acid. 3,681,319, Cl. 260-156.
Linde Aktiengesellschaft: *See—*
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Lindenmann, Adolf; and Suess, Rudolf. Disubstituted phenylpiperidones. 3,681,361, Cl. 260-293.800.
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Linning, David Lees, to United Kingdom Atomic Energy Authority. Flexible support wall for tube-in-shell heat exchanger. 3,680,627, Cl. 165-162.000.
Linthout, Theodoor Hillebrand, to Grinten, Van Der, N.V. Force-fitted pin-and tube joint and a frame for an apparatus provided with such a joint. 3,680,897, Cl. 287-20.00r.
Litt, Morton H.; Lund, Richard B.; Vitrone, John; and Herz, Jack L., to Allied Chemical Corporation. Process for the preparation of cyclic iminoethers. 3,681,329, Cl. 260-244.00r.
Litt, Morton H.; Lund, Richard B.; Vitrone, John; Herz, Jack L.; and O'Donnell, Francis C., to Allied Chemical Corporation. Process for the preparation of cyclic iminolthers. 3,681,333, Cl. 260-244.00r.
Little, Paul A.: *See—*
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Little Paul A.; and Lyon, Lloyd B., to American Refining Limited. Copper recovery process. 3,681,055, Cl. 75-108.000.
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Liu, Tung; and Stern, David R., to Occidental Petroleum Corporation. Process for the treatment of slimes and waste solids. 3,680,698, Cl. 210-46.000.
Livezey, William G., to General Motors Corporation. Friction plate and mating member. 3,680,675, Cl. 192-107.00r.
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Long, Geoffrey, to United Kingdom Atomic Energy Authority. Carbon content analysis. 3,681,032, Cl. 23-254.00r.
Long, Norwood G.; and May, Carl J., Jr., to Bell Telephone Laboratories, Incorporated. Switching strategy for mixed delay transmission channels. 3,681,533, Cl. 179-15.0as.
Longenecker, John G., to Ael Food Automation, Inc. Quick clearing extruder and adjustable extruder die assembly for foodstuffs. 3,680,994, Cl. 107-14.00c.
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Lord, Ronald D.: *See—*
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Lorton, Calvin J. Workpiece vise support attachment for surface grinding machine. 3,680,268, Cl. 51-218.000.
Los, Marinus, to American Cyanamid Company. 3-Methoxy-8β-methylestra 1,3,5(10),9(11)-tetraene-17β-carboxylic acid lower alkyl ester and intermediates in the preparation thereof. 3,681,407, Cl. 260-397.100.
Loudas, Basil L.; and Vogel, Herward A., to Minnesota Mining and Manufacturing Company. Polyfluoro-cyanurate polymers and process of preparation. 3,681,292, Cl. 260-77.5nc.
Lougheed, Earl H. Form for concrete flat work. 3,680,823, Cl. 249-3.000.
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Lowe, Desmond, to National Research Development Corporation. Device for venting gases from a tank. 3,680,585, Cl. 137-493.000.
Lowe, Richard L., to Aluminum Company of America. Alumina feeder. 3,681,229, Cl. 204-243.00r.
Loyd, Raymond E., to General Electric Company. Air conditioner mounting means. 3,680,258, Cl. 49-168.000.
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Lucas, Georges; and Viallet, Claude, to Societe Nationale des Petroles d'Aquitame. Photo-chemical production of oximes. 3,681,218, Cl. 204-162.0xn.
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Lynd, Langtry E.; Nilsen, Arnold; and Mac Cardle, Louis E., to N L Industries, Inc. Process for beneficiating ilmenite ore. 3,681,047, Cl. 75-1. 000.
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Lyon, Lloyd B.; and Little, Paul A., to American Refining Limited. Process for winning metals. 3,681,056, Cl. 75-108.000.
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MacDonald, Raymore D., to International Harvester Company. Continuous excavating loader with pivotal discharge conveyor. 3,680,233, Cl. 37-108.000.

MacDonald, Robert D., to Wright Products, mesne. Hydraulic door closer. 3,680,171, Cl. 16-58.000.

MacDowell Associates, Inc.: *See—*
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MacDowell, James E.: *See—*
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Mack, Zdenek, to Tesla, narodni podnik. Circuit arrangement for adding two signals in exact mutual phase position. 3,681,648, Cl. 315-23.000.

MacPherson, Donald Reid, to Johns-Manville Corporation. Method of water filtration. 3,680,699, Cl. 210-75.000.

Macro Synetic Systems, Inc.: *See—*
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Maeda, Kenji: *See—*
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Magerlein, Barney J., to Upjohn Company, The. Novel compounds related to lincomycin, a process for making the same, and a process for converting them to lincomycin and lincomycin analogs. 3,681,321, Cl. 260-210.00r.

Magerlein, Barney J., to Upjohn Company, The. Intermediates for making lincomycins and process for preparing the same. 3,681,324, Cl. 260-210.00r.

Magill, John W.: *See—*
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Maher, Stephen L., to Packaging Corporation of America. Hot pressing process. 3,681,115, Cl. 117-64.00r.

Maier, Karl, to International Standard Electric Corporation. Filtering method and a circuit arrangement for carrying out the filtering method. 3,681,701, Cl. 328-167.000.

Maier, Ludwig, to Monsanto Company. Flame retardant article containing tris-(3-halo-2-hydroxypropyl)-hydroxymethylphosphonium chloride. 3,681,126, Cl. 117-136.000.

Majcher, John: *See—*
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Makowski, Hanry S.; and Borzel, Paul, to Esso Research and Engineering Company. Novel process. 3,681,309, Cl. 260-80.780.

Malen, Charles; and Pascaud, Xavier, to Societe en nom collectif "-Science Union et Cie, Societe Francaise de Recherche Medicale'. Compositions and method for treating gastroduodenal ulcer and gastric hypersecretion with 2-pylidyl thioacetamide or a salt thereof. 3,681,499, Cl. 424-263.000.

Mallard, Manley T.: *See—*
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Mallatt, Russell C.: *See—*
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Malmstrom, Rolf Einar; and Tuominen, Tapio Kalevi, to Outokumpu Oy. Method for selective reduction of a pair of metal salts closely adjacent in the electromotive series from solution in the form of metal powder with the aid of a reducing gas. 3,681,054, C. 05/19/72.

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Manley, Harold J.; and Shaffer, Harry L., to GTE Sylvania Incorporated. Method and apparatus for signal bandwidth compression utilizing the fourier transform of the logarithm of the frequency spectrum magnitude. 3,681,530, Cl. 179-1.0sa.

Manthey, Willie; and Schmitter, Heinz, to BWG Bergwerk-und Walzwerk-Maschinenbau GmbH. System for cooling large, hot metal slabs. 3,680,344, Cl. 72-201.000.

Marans, Nelson S.: *See—*
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Marchetti, Charles Joseph; and Faure, Marc Henri Jean, to Societe d'Etudes et de Development des Aeroglisseurs Marins terrestrees et Amphibies S.E.D.A.M. Skirt facility for a ground-effect machine. 3,680,657, Cl. 180-121.000.

Marcio, Roger A.; and Winton, Orrin J., to Avco Corporation. Field test unit for a gas turbine fuel injection system. 3,680,371, Cl. 73-119.00a.

Marconi Company Limited, The: *See—*
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Margulies, Marcel Hidore, to Bridal AG. Method for manufacturing preformed eye-lines for eye-lids. 3,681,178, Cl. 156-584.000.

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Marsot, Charles Louis: *See—*
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Martin, Charles H., 50% to Hamilton, J. Brook. Arrangement for connecting concrete or clay bricks, blocks, panels and slabs. 3,680,277, Cl. 52-438.000.

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Martin, Elmore Louis, to Du Pont de Nemours, E. I., and Company. Charge-transfer complexes of fluoro- and cyano-substituted tetracyanoquinodimethans. 3,681,353, Cl. 260-267.000.

Martin, Francis W.: *See—*
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Martin, Jack, to Westinghouse Electric Corporation. Ribbon conductor press seal structure. 3,681,640, Cl. 313-222.000.

Martin, Walter H., to Refrigeration Engineering Corporation. Poultry shackle. 3,680,173, Cl. 17-44.100.

Martin-Thomas Limited: *See—*
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Marwin Machine Tools Limited: *See—*
Good, Richard Samuel Jonathon; and Harvey, Barry Charles, 3,680,438.

Mary, Donald J., to United States of America, Army. Optical angular accelerometer. 3,681,690, Cl. 324-162.000.

Marz, Gunther: *See—*
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Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Apparatus and method of removing excess liquid coating from glass filaments. 3,681,039, Cl. 65-3.000.

Maschinenbau Vita GmbH: *See—*
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Mason, Charley Mack, to Sun Oil Company (Delaware). Underwater gas detection system. 3,681,028, Cl. 23-253.00r.

Mason, Daniel W.; Greenstein, Bernard; and Woulbroun, John M., to Owens-Illinois, Inc. Resistors, compositions, pastes, and method of making and using same. 3,681,261, Cl. 252-514.000.

Mason, Frederick Percival; and Patience, Brian Michael, to Creed & Company Limited. Multi-head switching arrangement for not-percussive printer. 3,681,775, Cl. 346-74.00m.

Mason, John F.; Frazier, Bruce J.; and Freemen, Norman L., to Halliburton Company. Method of assembling a seal unit. 3,680,188, Cl. 29-157.000.

Massachusetts Institute of Technology: *See—*
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Masuda, Noboru; and Kobayashi, Tunekazu, to Denki Onkyo Co., Ltd. Contactless push-button type switching apparatus. 3,681,733, Cl. 338-32.00r.

Masuda, Noboru; and Kobayashi, Tunekazu, to Denki Onkyo Co., Ltd. Push-button type switching apparatus. 3,681,735, Cl. 338-32.00r.

Masuda, Noboru; and Kobayashi, Tunekazu, to Denki Onkyo Co., Ltd. Contactless switching apparatus. 3,681,736, Cl. 338-32.00r.

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Matsui, Masao; Tokura, Susumu; and Yamabe, Masahiro, to Kanegafuchi Boseki Kabushiki Kaisha. Multi-layer synthetic filament. 3,681,189, Cl. 161-175.000.
Matsumoto, Seiji: *See—*
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McCullough, Charles D., to Wilputte Corporation, mesne. Linear reciprocating scraping mechanisms for coke oven jambs. 3,681,201, Cl. 202-241.000.
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McGeachy, Donald E., to Numatics, Incorporated. Closed center valve. 3,680,577, Cl. 137-625.600.
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McGuckin, Hugh G., to Eastman Kodak Company. Process whereby a diazo containing material exhibits an imagewise change in triboelectric charging properties. 3,681,066, Cl. 96-1.00r.
McIntyre, Maurice J.; and Newton, John R., to Skagit Corporation. Lift truck with horizontally slewable load carrier. 3,680,721, Cl. 214-75.00r.
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McKenzie, Benjamin L. Artificial fishing lure. 3,680,247, Cl. 43-42.170.
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McKissick, Dale Clay, to American Standard Inc. Recovery of electrochemical plating solutions. 3,681,212, Cl. 204-51.000.
McLean, Neil J. Device for excluding slag and other floating impurities from molten metal as the metal is poured into a mold. 3,680,628, Cl. 164-362.000.
McMann, John R. Foldable baby crib. 3,680,155, Cl. 5-99.000.
McNamee, Raymond W., Jr.; Glavis, Frank J.; and Schiavone, Anthony E., to Rohm & Haas Company. Binder plate for use in xerography and process therefor. 3,681,069, Cl. 96-1.500.
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Mead Corporation, The: *See—*
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Meckel, Walter; and Muller, Erwin, to Farbenfabriken Bayer Aktiengesellschaft. Aromatic diamines containing ester groups and the production of polyurethane elastomers therefrom. 3,681,290, Cl. 260-77.5am.
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Melrose, David R.; Patterson, Ronald Lowdon Straiton; and Reed, Hugh Charles Brent, to Nationale Research Development Corporation. Artificial insemination of pigs. 3,681,490, Cl. 424-2.000.
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Mercer, Robert, to Westinghouse Electric Corporation. High temperature fan construction. 3,680,978, Cl. 415-180.000.
Mercier, Alfred C., to Honeywell Inc. High frequency galvanometer. 3,681,691, Cl. 324-154.00r.
Mercier, Jules, to Melle-Bezons. Process for continuous purification of esters by plural distillation at specific pressure ranges. 3,681,204, Cl. 203-77.000.
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Merrill, Marcellus S. Method and apparatus for determining caster trail. 3,680,369, Cl. 73-117.000.
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Messier, Donald R.; and Gazza, George E., to United States of America, Army. Preparation of ultrafine mixed metallic-oxide powders powders. 3,681,010, Cl. 23-20.000.
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Michalec, Lester W. Heat energy transfer device. 3,680,307, Cl. 60-26.000.
Michel, Buzano, to Societe Rhodiaceta. Textured polyethylene terephthalate yarns. 3,680,301, Cl. 57-140.00j.
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Miller, Raymond S. Clean combustion engine system. 3,680,305, Cl. 60-13.000.
Miller, Richard H., to Trimil Corporation. Electro-mechanical reader for interpreting the neurological quotient of a subject. 3,680,545, Cl. 128-2.00n.
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Mills, Ivor W.; Dimeler, Glenn R.; and Kirk, Merritt C., Jr., to Sun Oil Company. Process for preparing an aromatic oil and non- discoloring rubber composition containing said oil. 3,681,279, Cl. 260-33.6aq.
Mills, Loring E.; Marler, James V.; and Buntz, Billie J., to Kerr-McGee Corporation. Methods, apparatus, and products for handling brittle materials. 3,680,690, Cl. 206-65.00r.
Milutin, Ivan Cutakovie; Bartell, Charles; and Blum, Alfred, to Borden Inc. Pressure-sensitive adhesive web printed on back with transfer-proof ink. 3,681,105, Cl. 117-15.000.
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Monaghan, Frank; Mosher, Walter W., Jr.; and Long, Donald A., to Precision Dynamics Corporation. Method and apparatus for assembling fastener components in strip-like material. 3,680,194, Cl. 29-430.000.
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Mookherjee, Braja D.; and Taylor, William I., to International Flavors & Fragrances Inc. Preparation of cyclohexadecanolide. 3,681,396, Cl. 260-343.000.

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Moore, Dana W., to Honeywell Inc. Magnetic core memory providing both non-alterable and electrically alterable locations. 3,681,767, Cl. 340-174.00m.

Moore, Richard E. Method of making acrylic-polycarbonate laminate. 3,681,167, Cl. 156-311.000.

Moore, Richard E. Pressure polishing of extruded polycarbonate or polysulfone sheet. 3,681,483, Cl. 264-1.000.

Moran, Robert J.; and Marsilia, Louis P., to Cardinal Instrument Corporation. Dial thermometer. 3,680,385, Cl. 73-368.700.

Morat, Franz, to Morat, Franz, G.m.b.H. Synchronized program control apparatus for a knitting machine. 3,680,331, Cl. 66-50.00r.

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Morena, John; and Grauso, Robert N., to C.F. & Martin Company. Cylindrical drum shell. 3,680,425, Cl. 84-411.000.

Morgan, Bevly Boone, to U.S. Divers Co. Diving helmet. 3,680,556, Cl. 128-142.200.

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Moriconi, Joseph H.; Palermiti, Frank M.; and Jacknow, Burton B., to Xerox Corporation. Development of electrostatographic images. 3,681,107, Cl. 117-17.500.

Morin, Dennis R., to Bird Machine Company. Screening. 3,680,696, Cl. 209-240.000.

Morison, Charles R. W., to Union Carbide Corporation. Paint removal formulation. 3,681,251, Cl. 252-162.000.

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Moriyasu, Hiro, to Tektronix, Inc. Multistable circuit including elements preset for conduction. 3,681,617, Cl. 307-225.000.

Morley, Richard E.; Weiss, Eugene M.; Moline, Robert R.; and Greenberg, Michael P., to Alden Self-Transit Systems Corporation. Transportation system. 3,681,597, Cl. 246-63.00c.

Moroney, John E., to Westinghouse Electric Corporation. Wideband image terminated mixer. 3,681,697, Cl. 325-446.000.

Morris, Jack, to Olin Corporation. Induction coil for high frequency welding. 3,681,559, Cl. 219-10.790.

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Muraki, Kiichi; and Yoda, Tadashi, to Kabushiki Kaisha Komatsu Seisakusho. Duct for amphibian vehicle. 3,680,521, Cl. 115-1.000.

Murata, Norio; Takeda, Toshihiko; Sakai, Hirochika; and Matsuda, Nobuyuki, to Hitachi, Ltd. Self-driven carriage. 3,680,653, Cl. 180-23.000.

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Naarmann, Herbert; and Willersinn, Herbert, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of colorless high molecular polyphenylene ethers. 3,681,285, Cl. 260-47.0et.

Nagahisa, Masanori; Kusaka, Yoshimi; Iino, Koji; and Yamamoto, Zemichiro, to Nippon Soda Co., Ltd. Mixture of fatty oil and polybutadiene treated by any two of the following: boiling, bodying reaction with acids or acid anhydrides. 3,681,276, Cl. 260-23.70.

Nagata, Wataru; and Hirai, Shoichi, to Shionogy & Co., Ltd. Process for the preparation of isoquinuclidine alkaloids. 3,681,362, Cl. 260-293.530.
Nagayama, Tsuguo: *See—*
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Nahum, Lucio Sion, to Vita Mayer & C. Gia F. LLI Vita S.A.S. Process for the treatment of lignin to make it water soluble. 3,681,318, Cl. 260-124.00a.
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Naoi, Keigo; and Otuki, Katumi, to Hitachi, Ltd. Device for protecting a starting motor of an internal combustion engine. 3,681,658, Cl. 317-13.00r.
Natelson, Samuel. Hand automatic sampler and diluter. 3,681,030, Cl. 23-259.000.
Nathanson, Harvey C.; and Davis, John R., Jr., to Westinghouse Electric Corporation. Microelectronic conductor configurations and methods of making the same. 3,681,134, Cl. 117-212.000.
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Nordal, Vegard, to Nyegaard & Co. A/S. Process for the preparation of acylamido-2,4, 6-triiodobenzoic acids. 3,681,433, Cl. 260-470.000.

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Iwao, Norito; Naito Koichiro; Kawaguchi, Tadashi; Maeda, Minoru; and Norita, Toshihito, 3,681,052.

Norman, Thomas W.: *See—*
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North American Door Corporation: *See—*
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Northern Electric Company Limited: *See—*
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Northrop Corporation: *See—*
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Nosal, Vsevold Vladiminsovich: *See—*
Tselikov, Alexandr Ivanovich; Nosal, Vsevold Vladiminsovich; and Verderevsky, Vadim Anatolievich, 3,680,345.

Nostrand, William G.; and Nelson, Clifford G., to Nefco Filter Corporation. Air cleaner. 3,680,286, Cl. 55-484.00.

Novotny, Charles J.: *See—*
Zievers, James F.; and Novotny, Charles J., 3,681,210.

Nuclear Components Incorporated, mesne: *See—*
Abkowitz, Stanley; Siergiej, John M.; and Regan, Ronald D., 3,681,037.

Nuerrenbach, Axel: *See—*
Pommer, Horst; Seid, Bernhard; Nuerrenbach, Axel; Klotmann, Georg; and Grassner, Hans, 3,681,466.

Numatics, Incorporated: *See—*
McGeachy, Donald E., 3,680,577.

N.V. Industrieele Handelscombinatie Holland: *See—*
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Nyegaard & Co. A/S: *See—*
Nordal, Vegard, 3,681,433.

Nykopp, Erik A., to Oy Tampella AB. Apparatus for producing separate paper webs and combining them on a common porous belt. 3,681,193, Cl. 162-304.000.

O'Bara, Edward John, to American Cyanamid Company. Bromophenol isomerization. 3,681,467, Cl. 260-623.00r.

Obermaier, Frank E., to Eaton Corporation. Dual valve construction. 3,680,597, Cl. 137-630.190.

Obermaier, Georg; and Stangl, Anton, to Siemens Aktiengesellschaft. Winding mandrel. 3,680,806, Cl. 242-68.000.

Obetz, James Edgar; and Dardoufas, Kimon Constantine, to Allied Chemical Corporation. Finishing composition for multi-filament yarns. 3,681,244, Cl. 252-8.800.

Occidental Petroleum Corporation: *See—*
Liu, Tung; and Stern, David R., 3,680,698.

O'Donnell, Francis C.: *See—*
Litt, Morton H.; Lund, Richard B.; Vitrone, John; Herz, Jack L.; and O'Donnell, Francis C., 3,681,333.

Oetgen, Walter Richard; and Cooley, James, to U.S. Plywood-Champion Papers Inc. Ammonical fluorides for formaldehyde resin systems. 3,681,274, Cl. 260-17.30r.

Office de Radio Diffusion-Television: *See—*
Remy, Maurice A., 3,681,619.

Ogden, George D.; and Tencza, Albert D., to International Business Machines Corporation. Holographic imaging having improved resolution and intensity by synthetically enlarging the aperture. 3,680,943, Cl. 350-3.500.

Ohama, Tsuyoshi; and Iwasaki, Tetsuji, to Hitachi, Ltd. and Nisshin Steel Co., Ltd. Method of removing excess molten metal coatings by employing low pressure gas streams. 3,681,118, Cl. 117-102.00m.

Ohashi, Hiroshi. Method for applying adhesive to marginal edges of fabrics and bonding same. 3,681,163, Cl. 156-291.000.

Ohe, Shuzo, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Method and an apparatus for separation of azeotropic mixtures by distillation using salt effect. 3,681,203, Cl. 203-53.000.

Ohkita, Masao, to Alps Electric Co., Ltd. Play-free knob for a push-button switch. 3,681,555, Cl. 200-172.00r.

Ohlsson, Kurt L. Means for suspending files or folders in a filing cabinet. 3,680,938, Cl. 312-184.000.

Ohrberg, Carl V., to Danfoss A/S. Rotary piston engine. 3,680,987, Cl. 418-61.000.

Okada, Hiroshi, to Toyoda Koki Kabushiki Kaisha. Indexing device for a crankshaft. 3,680,876, Cl. 279-5.000.

Okada, Kan: *See—*
Hiyama, Yoshio; Fujita, Haruo; Tsunetomi, Eiichi; Okada, Kan; and Kude, Satoshi, 3,681,564.

Okami, Yoshiro: *See—*
Umezawa, Hamao; Maeda, Kenji; Okami, Yoshiro; and Takeuchi, Tomio, 3,681,491.

Okano, Teruo, to Kabushiki Kaisha Fuji Kogyosho. Turntable type work feeding method of feeding multiple-contact electric components for contact welding thereof and apparatus for performing such method. 3,681,561, Cl. 219-80.000.

Okonite Company, The: *See—*
Downs, Robert F., 3,681,621.

Okuno, Zenjiro; and Mizuno, Akinori, to Kabushiki Kaisha Ricoh. Liquid developer for electrophotography containing stain texture preventing agent. 3,681,243, Cl. 252-62.100.

Okura, Zenichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera objective adjustable for flash and non-flash photography. 3,680,459, Cl. 95-64.00r.

Olds, Richard G.; and Zammitt, Frank X., to Westinghouse Electric Corporation. Status indicating display for electronic circuit cards. 3,681,665, Cl. 317-101.0cc.

Olin Corporation: *See—*
Dean, Sheldon W., 3,681,019.
Morris, Jack, 3,681,559.
Ramsay, Marcus, 3,680,241.
Wallace, Baird; and Smith, Philip E., Jr., 3,680,863.

Olinkraft, Inc.: *See—*
Harrelson, Glen R., 3,680,765.

Oliver, Charles R.: *See—*
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Olmstead, Merlin E., to Bendix Corporation, The. Pseudo-random frequency generator. 3,681,708, Cl. 331-78.000.

Olsen, Sydney, Alvin: *See—*
Wood, Charles Drury, III; Olsen, Sydney, Alvin; and Potter, Jimmie Clinton, 3,680,287.

Olsson, Billy E., to Berg Electronics, Inc. Circuit board socket. 3,681,744, Cl. 339-256.00r.

Olsson, Gunnar. Cement concrete structure with anchoring means for preventing the occurence of large contraction cracks and a method for forming cement concrete structure. 3,680,450, Cl. 94-22.000.

Olthoff, James A.; Smith, Roger M.; and Trittipoe, Jack H., to Caterpillar Tractor Company. Cushion hitch leveling valve linkage. 3,680,892, Cl. 280-489.000.

Olympic Screw & Rivet Corporation: *See—*
Siebol, George; and Rippy, Dorian E., 3,680,202.

Omark-Winslow Aerospace Tool Co.: *See—*
Aydelott, Max M.; Beilfuss, Richard W.; and Borchert, Ernst, III, 3,680,262.

Omori, Norio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Starting fuel feed system for the fuel injection of an internal combustion engine. 3,680,532, Cl. 123-32.0ea.

O'Neill Eugene T.: *See—*
Kibbel, William H., Jr.; and O'Neill Eugene T., 3,681,022.

Onishi, Takekazu, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Safety device controlling vehicle locking. 3,680,335, Cl. 70-252.000.

Opti-Holding AG: *See—*
Frohlich, Alfons; Hochlehnert, Franz; and Rademacher, Werner, 3,680,604.

Orban, Ivan: *See—*
Somlo, Tibor; and Orban, Ivan, 3,681,403.

Ormond, Alfred Newman. Rhombic shear plate gage load element. 3,680,372, Cl. 73-141.00a.

Orwoll, Edward F.: *See—*
Patel, Vithal C.; and Orwoll, Edward F., 3,681,482.

Osheroff, Gene W., to Fluidtech Corporation. Fluidic apparatus for air-conditioning systems. 3,680,776, Cl. 236-49.000.

Osika, Thomas F., to McGill Manufacturing Company, Inc. Snap-on rocker cap for electric switch. 3,681,556, Cl. 200-172.00a.
Ossenkop, Robert J.; and Wilson, Alfred L., to AMF Incorporated. Elastic pull type exercising device. 3,680,858, Cl. 272-83.00r.
Oster, John, Manufacturing Co.: *See—*
Schaefer, George H., 3,681,568.
Oster, Stanley; Higashi, Herbert I.; and Dorner, Otto, to Northrop Corporation. Data acquisition unit with memory. 3,681,758, Cl. 340-172.500.
Ostermeier, Johann: *See—*
Herz, Luis; Mohr, Reinhard; Mundlos, Eberhard; Mundlos, Eberhard; and Ostermeier, Johann, 3,681,347.
Oswald, Alexis A., to Esso Research and Engineering. Adducts of dialkyl dithiophosphoric acid. 3,681,219, Cl. 204-162.000.
Otani, Akemasa. Steel-making process using iron scrap bundles. 3,681,048, Cl. 75-44.00s.
Otani, Sugio: *See—*
Tabata, Yoneho; Ozimui, Chihiro; and Otani, Sugio, 3,681,023.
Otis Engineering Corporation: *See—*
Raulins, George Max, 3,680,637.
Ott Chemical Company, The: *See—*
Babad, Harry, 3,681,457.
Otto, Robert J.; Sinclair, Alex H.; Reynolds, Ralph K.; and Neargardner, Robert F., to United States of America, Army. Endless track pin assembly. 3,680,924, Cl. 305-11.000.
Otuki, Katumi: *See—*
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Outboard Marine Corporation: *See—*
Trapp, Robert L., 3,680,926.
Outokumpu Oy: *See—*
Bryk, Petri Baldur; Honkasalo, Jorma Bruno; and Malmstrom, Rolf Einar, 3,681,046.
Malmstrom, Rolf Einar; and Tuominen, Tapio Kalevi, 3,681,054.
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Marzocchi, Alfred, 3,681,039.
Pearson, Lee E., 3,680,727.
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Owens-Illinois, Inc.: *See—*
Galeano, Sergio F., 3,680,796.
Ludder, Rodney E., 3,680,763.
Mason, Daniel W.; Greenstein, Bernard; and Woulbroun, John M., 3,681,261.
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Oxy-Dry Sprayer Corporation: *See—*
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Ozimui, Chihiro: *See—*
Tabata, Yoneho; Ozimui, Chihiro; and Otani, Sugio, 3,681,023.
Paap, Hans J.; Pitts, Robert W.; and Mueller, Allen H., to Texaco Inc. Well logging system. 3,681,601, Cl. 250-83.30r.
Packaging Corporation of America: *See—*
Maher, Stephen L., 3,681,115.
Page, Robert M., to United States of America, Navy. Long range obstacle locator system. 3,681,746, Cl. 340-3.00r.
Paillard S.A.: *See—*
Thevenaz, Jean, 3,680,811.
Pakendorf, Horst, to Vereinigte Flugtechnesche Werke-Fokker Gesellschaft mit beschrankter Haftung. Flat lifting fan unit. 3,680,316, Cl. 60-269.000.
Palau, Joseph, to Staubli Ltd. Improvements in or relating to draw hooks of a dobby. 3,680,601, Cl. 139-68.000.
Palazzola, Anthony: *See—*
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Palermiti, Frank M.: *See—*
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Palm, John W.: *See—*
Hujsak, Karol L.; and Palm, John W., 3,681,024.
Pammer, Erich; and Heidegger, Peter, to Siemens Aktiengesellschaft. Method of producing a protective layer of SiO_2 on the surface of a semiconductor wafer. 3,681,132, Cl. 117-201.000.
Pannier, Karl A., Jr.; Reynolds, Gordon S.; and Sorenson, James L., to LeVoy's Inc. Vacuum drainage collecting apparatus with disposable liner. 3,680,560, Cl. 128-276.000.
Panzarella, Santo C.: *See—*
Beachner, George J., Jr.; Beachner, Howard A.; and Panzarella, Santo C., 3,680,478.
Papp, Josef, to Environetics Inc. Method and means for generating explosive forces. 3,680,431, Cl. 89-7.000.
Pappalardo, Romano: *See—*
Brecher, Charles; Heller, Adam; and Pappalardo, Romano, 3,681,252.
Parker, Calvin E., Sr., to Bethlehem Steel Corporation. Strip edge shaping apparatus. 3,680,441, Cl. 90-24.00f.
Parks-Cramer Company: *See—*
Lee, Charles D., Jr., 3,680,297.
Lee, Charles D., Jr., 3,680,299.
Saunders, David W., 3,680,298.
Parlagreco, Thomas J. Hair curler comfort rest. 3,680,564, Cl. 132-9.000.
Pascaud, Xavier: *See—*
Malen, Charles; and Pascaud, Xavier, 3,681,499.
Pask, Arthur H.; Sparrow, Robert E.; and Boulanger, Roger J., to International Electric Research & Equipment Ltd. Electronic telephone call restricting device. 3,681,536, Cl. 179-18.0da.
Passal, Frank, to M & T Chemicals Inc. 1,5,5-Tris (cyanoethyl)-2-thiohydantoin. 3,681,378, Cl. 260-309.500.
Patel, Vithal C.; and Orwoll, Edward F., to FMC Corporation. Color improvement of phosphate esters. 3,681,482, Cl. 260-989.000.
Patentauswertung Vogelbusch Gesellschaft m.b.H.: *See—*
Rokitansky, Karl, 3,681,199.
Patience, Brian Michael: *See—*
Mason, Frederick Percival; and Patience, Brian Michael, 3,681,775.
Paton, Charles R.: *See—*
Cellerini, Albert T.; Majcher, John; and Paton, Charles R., 3,681,545.
Patron, Luigi; and Lo Monaco, Sergio, to Monsanto Company. Process for shortstopping the polymerization of acrylonitrile polymer compositions. 3,681,311, Cl. 260-85.500.
Patterson, Roger Lee; and Brodie, Bryan William, to Deere & Company. Seed dispensing apparatus. 3,680,742, Cl. 222-177.000.
Patterson, Ronald Lowdon Straiton: *See—*
Melrose, David R.; Patterson, Ronald Lowdon Straiton; and Reed, Hugh Charles Brent, 3,681,490.
Paul, Thomas Campbell, to Dowty Meco Limited. Chain conveyors. 3,680,682, Cl. 198-204.000.
Pauliukonis, Richard S. Quick exhaust valve. 3,680,582, Cl. 137-102.
Pavelle, James Clinton. Multiple design viewer. 3,680,227, Cl. 35-27.000.
Pavleszek, John; and Zugcic, Joseph Paul, to American Can Company. Necking-in die pilot. 3,680,350, Cl. 72-358.000.
Peacock, Dixon W.; and Needham, Riley B., to Phillips Petroleum Company. Aiding auto-ignition in tar sand formation. 3,680,634, Cl. 166-261.000.
Pearl, Curt Charles; and Poland, Sidney, to APL Corporation. Method and apparatus for manufacturing shopping bag. 3,680,445, Cl. 93-35.00r.
Pearson, Lee E., to Owens-Corning Fiberglas Corporation. Underground storage tank for liquids. 3,680,727, Cl. 220-3.000.
Pearson, R. A., Company: *See—*
Pearson, Reinhold A., 3,680,278.
Pearson, Reinhold A., to Pearson, R. A., Company. Method of placing partitions between grouped articles. 3,680,278, Cl. 53-26.000.
Pech, David J., to Manitowoc Engineering Company. Boom sheave assembly. 3,680,840, Cl. 254-192.000.
Peets, Robert S., to Singer Company, The. Carrying case for sewing machines. 3,680,939, Cl. 312-208.000.
Peinado, Marcel: *See—*
Bonavent, Gerard; Huvey, Michel; and Peinado, Marcel, 3,680,729.
Pennell, Ronald C.: *See—*
Ashton, Clark L.; Hays, Robert G.; and Pennell, Ronald C., 3,681,154.
Pennwalt Corporation: *See—*
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Penrice, Peter John: *See—*
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Peoria Journal Star, Inc., The: *See—*
Schwarz, Walter K.; and Schlink, David J., 3,680,775.
PEPRO-Societe pour le Developpement et la Vente de Specialties Chimiques: *See—*
Poignant, Pierre; Pillon, Daniel; and Caffiero, Rodolphe, 3,681,389.
Perkin-Elmer Corporation, The: *See—*
Rigden, Jameson Dane; and Huchital, David A., 3,681,600.
Perlman, David E.; and Degen, Donald S. Detection system employing digital bandpass filtering circuitry. 3,681,745, Cl. 340-1.00r.
Permaneer Corporation: *See—*
Portnoy, Allen J.; and Mundy, William L., 3,681,159.
Perrotti, Emmanual J.; Ranghelli, Joseph C.; and Felsenheld, Robert A., to International Telephone and Telegraph Corporation. Dual polarized printed circuit dipole antenna array. 3,681,769, Cl. 343-814.000.
Perry, Max W.; and Brockelsby, Norman D., to Dutton-Lainson Company. Motor switch arrangement. 3,681,550, Cl. 200-155.000.
Pertics, Emile E. Device for stemming fruit. 3,680,618, Cl. 146-55.000.
Perusse, Ralph Edmond: *See—*
Treschitta, John Philip; and Perusse, Ralph Edmond, 3,681,719.
Pesson, Marcel, to Societe anonyme dite: Laboratoire Roger Bellon. 2,3-Dihydro-1,4-benzoxazines. 3,681,330, Cl. 260-244.00r.
Peter, Peter, to Aktiengesellschaft Brown, Boveri & Cie. Pole coil structure for dynamo-electric machine. 3,681,634, Cl. 310-218.000.
Peters, Richard W.: *See—*
Burkhard, Mahlon D.; and Peters, Richard W., 3,681,531.
Burkhard, Mahlon D.; and Peters, Richard W., 3,681,756.
Petersen, Niel R., to MTS Systems Corporation. Servovalve with accumulator means on drain cavities. 3,680,594, Cl. 137-625.690.
Petersen, Povl Viggo; and Ammitzboll, Thorkil, to Kefalas A/S. α-Isomer of the decanoic acid ester of 10-[3-(4-hydroxyethyl-1-piperazinyl)propylidene]-2-trifluoromethyl thiaxanthene, acid addition salts thereof, method of use and compositions. 3,681,346, Cl. 260-240.0tc.
Peterson, Leslie D., to Raven Industries, Inc. Spinning top and target game. 3,680,864, Cl. 273-110.000.

Peterson, Marvin L., to Du Pont de Nemours, E. I., and Company. Manufacture of acrylamide-based polymers in liquid ammonia. 3,681,215, Cl. 204-159.230.
Peterson, Philip R.; Wind, Robert H.; and Mark, Douglas E., to General Motors Corporation. Anti-lock brake control with sensor monitoring circuit. 3,680,923, Cl. 303-21.0af.
Petree, Harris E., to Ciba-Geigy Corporation. Suppression of tris(alkylamino)-s-triazine formation in the production of chloro-bis(alkylamino)-s-triazines through the use of additional cyanuric chloride. 3,681,337, Cl. 260-249.800.
Petro-Tex Chemical Corporation: *See*—
Funkhouser, Terry D., 3,681,202.
Pettibone, Raymond B.; and Niemiec, Albin J., to Sperry Rand Corporation. Removable liner for gear pump. 3,680,990, Cl. 418-178.000.
Peveto, Edmond A.: *See*—
Hackett, Homer L.; Cullison, David A.; and Peveto, Edmond A., 3,681,014.
Pevitt, Herman, Jr., to General Motors Corporation. Die blade for dielectric embossing press. 3,681,170, Cl. 156-380.000.
Pfaff, G. M., A.G., Firma: *See*—
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Pfeiffer, Francis R., to Smith Kline & French Laboratories. Adamantyl and adamantylalkyl 2-aminoethyl phosphates, phosphonates and phosphinates. 3,681,480, Cl. 260-944.000.
Pfeiffer, Heinrich, to Dieffenbacher, J., GmbH. Continuously operating press. 3,680,476, Cl. 100-151.000.
Pfitzner, Klaus: *See*—
Heitz, Walter; and Pfitzner, Klaus, 3,681,269.
Pfizer Inc.: *See*—
Butler, Kenneth; and Hamanaka, Seiichi, 3,681,342.
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Philco-Ford Corporation: *See*—
Thompson, Alvin E., 3,680,394.
Philipe, Oscar, to Anglo Swiss (Equipment Production) Limited. Appliances for cooking and/or heating foodstuffs. 3,681,096, Cl. 99-339.000.
Phillips, John Franklin. Fabric shearing apparatus. 3,680,418, Cl. 83-80.000.
Phillips Petroleum Company: *See*—
Draper, Homer L.; and Gagle, Duane W., 3,680,319.
Erickson, Wayne K.; and Buchanan, David R., 3,680,334.
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Stapp, Paul R., 3,681,471.
Uraneck, Carl A.; and Burleigh, John E., 3,681,300.
Phillips, William H., Jr., to Carmet Company. Die assembly. 3,680,340, Cl. 72-36.000.
Phillips, William H. Jr., to Allegheny Ludlum Steel Corporation. Die assembly. 3,680,354, Cl. 72-467.000.
Pickett, David A., to Ross Operating Valve Company. Resilient seal spool valve. 3,680,596, Cl. 137-625.690.
Picq, Patrice, to Aluminium Suisse SA, mesne. Method for retaining objects in a container. 3,680,279, Cl. 53-26.000.
Piegza, Henry J., to Welding & Steel Fabrication Co., Inc. Sheaved pressure vessel unit. 3,680,569, Cl. 134-64.000.
Pierart, Robert, to Babcock-Atlantique. Welding construction for multilayered devices. 3,680,584, Cl. 137-143.000.
Pierce, Ogden R.; and Kim, Yung Ki, to Dow Corning Corporation. Fluoroalkylene silanes and siloxanes. 3,681,418, Cl. 260-448.2.
Pierre-Dit-Mery, Jean-Marc, to Compagnie de Saint-Gobain. Process and apparatus for tempering of glass by electrochemical ion exchange. 3,681,040, Cl. 65-30.000.
Pigulski, Chester J.: *See*—
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Pike, Daniel W., to Hi-Line Plastics Incorporated. Pallet structure. 3,680,495, Cl. 108-53.000.
Pikl, Josef: *See*—
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Pilarczyk, Karol, to Carrier Corporation, mesne. Compressor power recovery. 3,680,973, Cl. 415-53.000.
Pilkington Brothers Limited: *See*—
Branch, Geoffrey Hindle; Hall, James Edward; Bickerstaff, Kenneth; and Russell-Rayner, Albert Patrick, 3,680,677.
Critchley, Derek; Dawber, Frank; and Grainger, Kenneth Frederick, 3,680,388.
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Rejsa, Jack J., 3,680,616.
Pintsak, William P.: *See*—
Collura, Peter C.; and Pintsak, William P., 3,680,766.
Pioli, Alexander Joseph Peter; Hollyhead, William Brian; and Todd, Peter Frank, to Imperial Chemical Industries Limited. Organometallic compounds and uses thereof. 3,681,317, Cl. 260-94.90b.
Pioneer Electronic Corporation: *See*—
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Pisanchyn, John; Fuhrmann, Robert; Sifniades, Stylianos; and Tunick, Allen Abraham, to Allied Chemical Corporation. Process for the preparation of lysine. 3,681,460, Cl. 260-566.00a.
Pitts, Robert W.: *See*—
Paap, Hans J.; Pitts, Robert W.; and Mueller, Allen H., 3,681,601.
Pitzer, Emory W., to Phillips Petroleum Company. Activation of an oxidative dehydrogenation catalyst. 3,681,258, Cl. 252-437.000.
Plasser, Franz; and Theurer, Josef. Mobile track working apparatus. 3,680,486, Cl. 104-1.000.
Plessey Company, Limited, The: *See*—
Davies, Guy Edward, 3,680,578.
Plough, Irving L., to Black Clawson Company, The. Continuous thickness measuring apparatus for veneer and other web material. 3,680,215, Cl. 33-143.00l.
Podola, Nikolai Vasilievich: *See*—
Lifshits, Viktor Senderovich; Andrianov, Vladimir Rubenovich; Rykalin, Nikolai Nikolaevich; Rykalin, Nikolai Nikolaevich; Krasnev, Tibor Ferentsevich; Podola, Nikolai Vasilievich; and Krivonos, Vadim Petrovich, 3,681,563.
Poignant, Pierre; Pillon, Daniel; and Caffiero, Rodolphe, to PEPRO-Societe pour le Developpement et la Vente de Specialties Chimiques. Acylheterocyclic derivatives of urea suitable for use as agricultural antiparasitics. 3,681,389, Cl. 260-332.20c.
Poland, Sidney: *See*—
Pearl, Curt Charles; and Poland, Sidney, 3,680,445.
Polaroid Corporation: *See*—
Bellows, Alfred H., 3,680,946.
Debruyn, Frank E., Jr., 3,681,072.
Debruyn, Frank E., Jr., 3,681,073.
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Polk, Ralph, Jr. Fruit peeling knife assembly. 3,680,614, Cl. 146-3.00m.
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Pollak, Fred, to Polychrome Corporation. Thermographic stencil sheet. 3,681,112, Cl. 117-35.500.
Pollet, Robert Joseph; and Willems, Jozef Frans, to Gevaert-AGFA N.V. Selenium compound antifoggant for silver halide emulsion. 3,681,078, Cl. 96-109.000.
Polychrome Corporation: *See*—
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Pommer, Horst; Seid, Bernhard; Nuerrenbach, Axel; Klotmann, Georg; and Grassner, Hans, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Continuous production of axerophthol. 3,681,466, Cl. 260-617.00a.
Poot, Albert Lucien, to Agfa-Gevaert N.V. Production of coloured colloid patterns. 3,681,074, Cl. 96-35.000.
Pope, Victor James: *See*—
Preston, Leslie Raymond; Pope, Victor James; Stagg, John; and Green, Ronald Sydney, 3,681,177.
Porsche, Dr.-Ing. H.c.F., K.G., Firma: *See*—
Eyb, Wolfgang; and Klosterhuber, Robert, 3,680,654.
Portal, Pierre, to S.A. Forges de Bologne. Method of and apparatus for forming parts with re-entrant surfaces. 3,680,381, Cl. 72-354.000.
Porter, Allan W. H. Process and apparatus for storing weft yarn in looms. 3,680,600, Cl. 139-122.00r.
Portnoy, Allen J.; and Mundy, William L., to Permaneer Corporation. Registered printing and embossing of laminated boards. 3,681,159, Cl. 156-209.000.
Post, Herman; Prigozy, Stephen; and Millie, Orrin, to Robins Industries Corporation. Device for punching cards or the like. 3,680,774, Cl. 234-100.000.
Potlatch Forests, Inc.: *See*—
Keller, Harold A.; and Young, Patrick J., 3,681,174.
Potter Instrument Company, Inc.: *See*—
Rush, Charles D.; and Hube, Arthur B., 3,680,734.
Potter, Jimmie Clinton: *See*—
Wood, Charles Drury, III; Olsen, Sydney, Alvin; and Potter, Jimmie Clinton, 3,680,287.
Potts, William F., to Liberty Combustion Corporation. Fluid fuel igniter control system. 3,681,001, Cl. 431-264.000.
Poulton, Barrie Armstrong, to Handling, Simon, Engineers Limited. Bag slitting machines. 3,680,725, Cl. 214-305.000.
Pounders, Jack D.: *See*—
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PPG Industries, Inc.: *See*—
Wismer, Marco; and Prucnal, Paul J., 3,681,307.
Pratt & Whitney Inc.: *See*—
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Pratt, Jack R. Safety switch. 3,681,610, Cl. 307-10.00r.
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Preddy, L V., Jr., to Dye Trucking Company. Vehicle spring connector. 3,680,850, Cl. 267-54.000.
Preiser, Mark E., to General Motors Corporation. Shut-off arrangement for the power controlled rectifiers of a DC to AC inverter. 3,681,675, Cl. 321-5.000.
Prescott, Robert C.: *See*—

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Preston, Jerome A., to Essex International, Inc. Siliated polyhydantoin, polyester hydantoin siloxanes and polyhydantoin amide siloxanes for use as wire coatings. 3,681,282, Cl. 260-46.50e.
Preston, Leslie Raymond; Pope, Victor James; Stagg, John; and Green, Ronald Sydney, to Grace, W. R., & Company. Packing apparatus. 3,681,177, Cl. 156-583.000.
Prial, Gerard; and Pigulski, Chester J. Bilge cleaner composition. 3,681,264, Cl. 252-526.000.
Price, Alson K.: *See—*
Sweeney, Richard F.; and Price, Alson K., 3,681,413.
Price, Charles E. Fluid flow control device. 3,680,574, Cl. 137-81.500.
Prichard, William W., to Du Pont de Nemours, E. I., and Company. Catalytic preparation of chloroacid chlorides. 3,681,449, Cl. 260-544.00a.
Priesemuth, Wolfgang. Diaphragm relay. 3,681,720, Cl. 335-61.000.
Prigozy, Stephen: *See—*
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Princen, Lambertus H., to United States of America, Agriculture. Glossy finish linseed water emulsion paints and nonaglommerated pigment composition for said paints. 3,681,099, Cl. 106-254.000.
Process Evaluation and Development Corporation: *See—*
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Procter & Gamble Company, The: *See—*
Bedenk, William T.; and Grabel, Lawrence, 3,680,473.
Wann, Robert Earl, 3,681,247.
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Proektnokonstruktorsky Institute Metallurgicheskogo Mashinostroeniya: *See—*
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Pryor, Robert C., to Phillips Petroleum Company. Two-stage smokeless incinerator. 3,680,500, Cl. 110-8.00a.
Purdy, Richard A.; and Rutledge, Thomas F., to American Metal Climax, Inc. Method and apparatus for cleaning conveyor belts. 3,680,684, Cl. 198-230.000.
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Puskas, William L., to Branson Instruments, Incorporated. Oscillatory circuit for ultrasonic cleaning apparatus. 3,681,626, Cl. 310-8.100.
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Brown, Lloyd H.; Dunlop, Andrew P.; and Eftax, Daniel S. P., 3,681,420.
Quenot, Andre. Linear extensible measuring instrument with telescopic members. 3,680,214, Cl. 33-169.00r.
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Miller, Samuel E., 3,680,509.
Quindar Electronics, Inc.: *See—*
Epstein. Philip L., 3,681,696.
Quinn, Halsey P., to Wagner Electric Corporation. Light-regulating power supply circuit for gaseous discharge lamp. 3,681,654, Cl. 315-151.000.
Quinones, Nicanor Quinones: *See—*
Howell, Charles Frederick; Hardy, Robert Allis, Jr.; and Quinones, Nicanor Quinones, 3,681,357.
Quisling, Sverre. Clothes hanger clamp. 3,680,747, Cl. 223-91.000.
Rabouyt, Denis; and Marsot, Charles Louis. Framed impeller. 3,680,977, Cl. 415-172.000.
Rademacher, Werner: *See—*
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Ramsay, Marcus, to Olin Corporation. Impact ignition shotgun for firing caseless ammunition. 3,680,241, Cl. 42-10.000.
Ranghelli, Joseph C.: *See—*
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Ranz, Erwin; Von Rintelen, Harald; Neumann, Wolfram; and Muller, Gerhard, to Agfa-Gevaert Aktiengesellschaft. Photographic material comprising arylene polyamido, polycarboxylic acids. 3,681,075, Cl. 96-90.00r.
Raulins, George Max, to Otis Engineering Corporation. Well tools and methods of operating a well. 3,680,637, Cl. 166-313.000.
Rausch, Paul Gilger, to Foseco Trading, A.G. Rings of heat insulating material for use with floating head boxes in ingot casting. 3,680,827, Cl. 249-202.000.
Raven Industries, Inc.: *See—*
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Rayner, Wilfred H. G., to Clarke and Smith Manufacturing Company Limited. Tape recorder. 3,680,812, Cl. 242-199.000.
Raytheon Company: *See—*
Cease, Richard G.; and Bickford, William J., 3,681,695.
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Hsueh, Chia Ying, 3,681,693.
Johnson, David August, 3,681,703.
Rear, Melvin K.; and Greivell, Robert L., to American Hoist and Derrick Company. Excavating machine. 3,680,919, Cl. 299-39.000.
Rebsdat, Siegfried: *See—*
Hahn, Helmut; Rebsdat, Siegfried; Ruchlak, Kasimir; and Schuierer, Erich, 3,681,426.
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Leger, Andre, 3,680,656.
Reich, Eugene H.; and Zasztowt, Frank J., to Wyonissing Corporation. Flexible cast-coated paper. 3,681,116, Cl. 117-64.00c.
Reich, Rudolph. Embroidery machine. 3,680,505, Cl. 112-83.000.
Reichert, Karl O. Method of grooving semiconductor wafer for the dividing thereof. 3,680,213, Cl. 33-18.00r.
Reid, Paul; and James, Brian, to Lysaght, John, (Australia) Limited. Stripping excess coating liquid from moving strip materials. 3,681,119, Cl. 117-102.00l.
Reifenhauser, Hans; and Reitmeyer, Paul, to Reifenhauser, K.G. Ultrasonic welding and cutting apparatus. 3,681,176, Cl. 156-580.000.
Reifenhauser, K.G.: *See—*
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Reilly, Bertram B. Apparatus for moving refuse from a bin. 3,680,719, Cl. 214-17.00d.
Reilly, Dennis A., to Oxy-Dry Sprayer Corporation. Method and apparatus for electrostatic spraying. 3,680,779, Cl. 239-3.000.
Reilly, Joseph F., Jr.; Daigle, Joseph D.; and Hubenak, Daniel W., Jr., to Faroy, Inc. Method and apparatus for manufacturing candles. 3,681,123, Cl. 117-121.200.
Reinhall, Rolf Bertil, to Defibrator Aktiebolag. Sluice feeders for introducing finely divided chips into vessels under pressure. 3,681,192, Cl. 162-246.000.
Reinnagel, Richard E., to Cornell Aeronautical Laboratory, Inc. Safety venting apparatus combined with an aerosol container. 3,680,743, Cl. 222-397.000.
Reisner, David B.; Ludwig, Bernard J.; and Berger, Frank M., to Carter-Wallace, Inc. 2,3-Dihydro-9H-isoxazolo(3,2-b)quinazolin-9-ones. 3,681,350, Cl. 260-251.00a.
Reitmeyer, Paul: *See—*
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Rejsa, Jack J., to Pillsbury Company, The. Method and apparatus for severing food products. 3,680,616, Cl. 146-222.000.
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Renckhoff, Gustav: *See—*
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Rennick, Lyle V., to Northrop Corporation. Accurate square-law detector circuit. 3,681,700, Cl. 328-144.000.
Research Corporation: *See*—
Hamann, Donald D., 3,680,694.
Lehneis, Hans R.; and Pounders, Jack D., 3,680,549.
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Reynolds, Ralph K.: *See*—
Otto, Robert J.; Sinclair, Alex H.; Reynolds, Ralph K.; and Neargardner, Robert F., 3,680,924.
Reynolds, Warren A.: *See*—
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Rhoades, Lee A.; and Mallard, Manley T., to Rochester Corporation, The. Electrical cable. 3,681,514, Cl. 174-108.000.
Rhomega System, Incorporated: *See*—
Hoge, Henri H., 3,681,620.
Rhone-Poulenc S.A.: *See*—
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Brunie, Jean-Claude; Constantini, Michel; Crenne, Noel; and Jouffret, Michel, 3,681,447.
Ricci, Vincent C.; and Simon, William F., to Sperry Rand Corporation. Split output for a logic gate. 3,681,615, Cl. 307-214.000.
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Richards, John F.: *See*—
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Richards, William D.: *See*—
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Richardson-Merrell S.p.A.: *See*—
Mastursi, Michele; Lembo, Sabino; and Viterbo, Rene, 3,681,354.
Richie, Edward H.; and McAlphine, John F. Method for over-labeling gable topped containers. 3,681,160, Cl. 156-212.000.
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Riegel Paper Corporation: *See*—
Young, Chauncey; and Watson, William H., 3,680,764.
Rigden, Jameson Dane; and Huchital, David A., to Perkin-Elmer Corporation, The. Retarding field electron spectrometer. 3,681,600, Cl. 250-49.50a.
Rikagaku Kenkyusho: *See*—
Takamatsu, Toshiaki; and Fukada, Eiichi, 3,680,358.
Ringholm, Carl-Erik, to Aktiebolaget NOHAB. Electro hydraulic control device for water turbines. 3,680,972, Cl. 415-36.000.
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Roberts, Donald Leroy; and Rice, William Yates, Jr., to Reynolds, R. J., Tobacco Company. Synthesis of prosphorane compounds. 3,681,428, Cl. 260-469.000.
Roberts, Eric A., to Texaco Inc. Safety apparatus for mammoth tankers. 3,681,657, Cl. 317-2.00d.
Roberts, Geoffrey L.: *See*—
DeCardi, Pedro; Taylor, Carl S.; and Roberts, Geoffrey L., 3,680,885.
Roberts, John F.: *See*—
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Roberts, John F., to Roberts, John F., Fine, Harry C., 2nd and Landmesser, Karl, Jr. Electrically energized decorative support apparatus. 3,681,589, Cl. 240-10.100.
Roberts, John Tudor, to Ferranti, Limited. Assemblies of semiconductor devices having mounting pillars as circuit connections. 3,680,206, Cl. 29-580.000.
Robertshaw Controls Company: *See*—
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Robertson, Jerry E., to Minnesota Mining and Manufacturing Company. Quaternary fluorinated ammonium salts. 3,681,441, Cl. 260-501.150.
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Robinson, Vernon S. Chain saw guide. 3,680,607, Cl. 143-32.00f.
Rocha, John Gonsalves, to Maremont Corporation. Machine gun having dual feeding means for selectively feeding cartridges. 3,680,432, Cl. 89-33.0sf.
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Rock, William A.; and Valleroy, Gustave J., to Cornnuts, Inc. Method of producing a potato snack product. 3,681,084, Cl. 99-104.000.
Rodgers, Warren: *See*—
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Rodriguez, Herman Robert; and de Stevens, George. 1,3-Benzodiazepines. 3,681,340, Cl. 260-239.0bd.
Rogall, Herbert, to Singer Company, The, mesne. Accelerometer. 3,680,393, Cl. 73-517.00b.
Rogers, Alan B.; and Schwall, Donald V., to Armour and Company. Meat and gravy product and method of making same. 3,681,094, Cl. 99-187.000.
Rogers, John M. Screw thread cleaning apparatus. 3,680,167, Cl. 15-104.140.
Rogers, Roy L. Landscaping apparatus. 3,680,257, Cl. 47-47.000.
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Rokitansky, Karl, to Patentauswertung Vogelbusch Gesellschaft m.b.H. Process of producing yeast of low plasticity and high solids content. 3,681,199, Cl. 195-98.000.
Rollei-Werke Franke & Heidecke: *See*—
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Romanenko, Mikhail Trofimovich: *See*—
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Romann, Peter; Knapp, Heinrich; and Fussner, Paul, to Bosch, Robert, G.m.b.H. Electromagnetically operated fuel injection valve. 3,680,794, Cl. 239-585.000.
Rondestvedt, Christian S., Jr., to Du Pont de Nemours, E. I., and Company. Aromatic acid chloride process. 3,681,451, Cl. 260-544.00m.
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Rondestvedt, Christian S., Jr., to Du Pont de Nemours, E. I., and Company. Aromatic acid chloride process. 3,681,454, Cl. 260-544.00m.
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Roos, Charles J. Structure and a method for isolating a building against radioactive fallout. 3,680,498, Cl. 109-1.00s.
Rose, Arthur W. Tie rod puller. 3,680,835, Cl. 254-29.00r.
Rosemount Engineering Company: *See*—
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Rosenberg, Robert B.: *See*—
Kweller, Esher R.; Staats, William R.; and Rosenberg, Robert B., 3,681,002.
Rosendale, Douwe. Ventilation regulating device. 3,680,471, Cl. 98-117.000.
Rosenfeld, Daniel D.; and Gorbaty, Martin L., to Esso Research and Engineering Company. Uracil phosphates containing an aromatic fused ring. 3,681,352, Cl. 260-260.000.
Ross, Charles W., to Leeds & Northrup Company. Method for automatically detecting the presence of cyclic pulses in noise corrupted process measurements. 3,681,780, Cl. 444-1.100.
Ross, Donald S.: *See*—
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Rozmus, Walter J., 37 1/2% to Rozmus, Walter J., 37 1/2% to Lizenby, James R., 12 1/2% to Dahlin, William R. and 12 1/2% to Moncher, Frank L. Pivot assembly for tools and the like. 3,680,212, Cl. 30-266.000.
Rozmus, Walter J.; and Rozmus, Matt T., to Kelsey-Hayes Company. Fine wire butt welder. 3,680,761, Cl. 228-3.000.
Rube, Helmut, to Bosch, Robert, Photokino, G.m.b.H. Slide projector and tray therefor. 3,680,953, Cl. 353-117.000.
Ruchlak, Kasimir: *See—*
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Rudd, Michael J., to British Aircraft Corporation, Limited. Measurement of particle sizes. 3,680,961, Cl. 356-102.000.
Rudolph, Werner; and Massonne, Joachim, to Kali-Chemie Aktiengesellschaft. Process of separating tetrafluoroethylene from gas mixtures containing the same. 3,680,289, Cl. 55-48.000.
Rudy, Jerome, to Lever Brothers Company. Fabric softening. 3,681,241, Cl. 252-8.750.
Rufenacht, Kurt, to Ciba-Geigy Corporation. Composition and method for controlling pests employing certain 1,3,4-thiadiazole-5(4H)-one derivatives. 3,681,494, Cl. 424-200.000.
Ruhrchemie Aktiengesellschaft: *See—*
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Ruschig, Heinrich; Duwel, Dieter; Konig, Johann; and Loewe, Heinz, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 3-Acyl-γ-resorcylic acid anilides. 3,681,458, Cl. 260-559.00s.
Rush, Charles D.; and Hube, Arthur B., to Potter Instrument Company, Inc. Vacuum tank construction. 3,680,734, Cl. 220-83.000.
Russ, John H. Bale stooker. 3,680,717, Cl. 214-613.000.
Russell, George D.; and Smith, Samuel E. Football game target. 3,680,862, Cl. 273-55.00r.
Russell, Lewis B.; and Kelly, William F., to Marine Sciences Corporation. Graphical plotter. 3,681,773, Cl. 346-29.000.
Russell, William S., to Hooker Chemical Corporation. Metal coating process. 3,681,207, Cl. 204-1.00t.
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Rutherford, Harry T. Safety rotary mower. 3,680,295, Cl. 56-320.200.
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Rydh, Thore Oskar Verner, to Astra Lakemedel Aktiebolag. Process for the preparation of salts of an optically active amine and D(-)-azidophenylacetic acid. 3,681,400, Cl. 260-349.000.
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Lifshits, Viktor Senderovich; Andrianov, Vladimir Rubenovich; Rykalin, Nikolai Nikolaevich; Rykalin, Nikolai Nikolaevich; Krasnev, Tibor Ferentsevich; Podola, Nikolai Vasilievich; and Krivonos, Vadim Petrovich, 3,681,563.
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Scanlon, F. Taylor, to Honeywell Information Systems Inc. Machine process for positioning interconnected components to minimize interconnecting line length. 3,681,782, Cl. 444-1.000.
Schabel, Joachim; and Liebegott, Hans-Peter, to DS-Chemie GmbH & Co. KG. Manufacture of a floor covering with a pile. 3,681,104, Cl. 117-67.00t.
Schaefer, George H., to Oster, John, Manufacturing Co. Electrically heated cooking appliance. 3,681,568, Cl. 219-432.000.
Schaefer, Richard J. Ozone sewage treatment apparatus. 3,680,704, Cl. 210-218.000.
Schaeff, Hans. Hydraulic clamp for laterally movable mounted dredges. 3,680,724, Cl. 214-138.
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Scheidweiler, Andreas; Muller, Peter; and Kuhn, Max, to Cerferus AG. Smoke detector with at least one smoke measuring chamber. 3,681,603, Cl. 250-83.6ft.
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Scherenberg, Hans O., to Daimler-Benz Aktiengesellschaft. Spark plug for internal combustion engines. 3,680,538, Cl. 123-169.0pb.
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Scherer, Otto; Hahnle, Reinhard; and Schneider, Gunter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Difluorochloromethylaryl ureas, their preparation and use as herbicides. 3,681,422, Cl. 260-453.00r.
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Schmeling, Per Erik, to Aktiebolaget Atomenergi. Apparatus for producing gaseous fission products, particularly Xe-133. 3,680,284, Cl. 55-208.000.
Schmidt, Joseph P. Football blocking device. 3,680,861, Cl. 273-55.00r.
Schmidt, Karl-Julius; Hammann, Ingeborg; and Unterstenhofer, Gunter, to Farbenfabriken Bayer Aktiengesellschaft. Phosphoric (-phosphonic) and thiono- phosphoric (-phosphonic) acid esters. 3,681,334, Cl. 260-248.0as.
Schmitt, Walter, to Heidenhain, Johannes, Dr., Firma. Photoelectric device for the determination of the position of line markings. 3,681,605, Cl. 250-206.000.
Schmitt, Wilhelm, to Freudenberg, Carl. Radial sealing rings and method of improving their sealing action. 3,681,142, Cl. 134-42.000.
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Schneider, Fredric H. Wall frame prefabrication apparatus. 3,680,617, Cl. 144-288.000.
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Schott, Lawrence A. Fluid discharge nozzle. 3,680,792, Cl. 239-452.000.
Schratz, Hubert; and Schneider, Karl-Heinz, to Bosch, Robert, G.m.b.H. Ignition distributor with cam and cam follower lubrication means. 3,681,543, Cl. 200-19.
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Schwarz, Steven E., to Federal-Mogul Corporation. Flexible pneumatic duct connectors assembled with internal seals. 3,680,874, Cl. 277-153.000.
Schwarz, Walter K.; and Schlink, David J., to Peoria Journal Star, Inc., The. Calculating device. 3,680,775, Cl. 235-71.00a.
Schweitzer, Bernard P., to Hughes Aircraft Company. Non-interacting complementary coding system. 3,681,579, Cl. 235-181.000.
Schwerin, Gunther, to Bosch, Robert, GmbH. Apparatus for regulating a first flow depending on a controlled second flow. 3,680,581, Cl. 137-101.000.
Schwieter, Ulrich; Thommen, Hans; and Weiser, Harald, to Hoffmann-La Roche Inc. Pigmentation of egg yolk. 3,681,082, Cl. 99-4.000.
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Sello, Stephen B., to Stevens, J. P., & Co., Inc. Preparation of flame-retardant fabrics. 3,681,060, Cl. 117-137.000.

Sello, Stephen B.; and Egrie, Paul H., to Stevens, J. P., & Co., Inc. Process for preparing durable flame-retardant synthetic-cellulosic fabric blends. 3,681,124, Cl. 117-136.000.

Selman, Murray; Wamser, Christian A.; and Wilkalis, John E., to Allied Chemical Corporation. Process for preparing alpha ammonium uranous pentaflouride. 3,681,035, Cl. 23-346.000.

Semonsky, Miroslav; and Zikan, Viktor, to Spofa, Spojene Podniky Pro Zdravotnickou Vyrobu. Therapeutic methods of employing hydrogen maleate salt of N-(D-6-methyl-8-isoergolenyl)-N', N'-diethylcarbamide. 3,681,497, Cl. 424-261.000.

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Senior, David Clive, to Davy and United Engineering Company. Moulding press. 3,680,993, Cl. 425-167.000.

Seppo, Arnold Ivanovich, to Tallinskaya bolnitsa Tynismyae. Fixing apparatus for osteosynthesis of fractures of long tubular bones. 3,680,553, Cl. 128-92.0bc.

Serrie, Shelagh; Mc Grady, Seamus; and Bloomer, Richard. Apparatus to match levels of reading ability to corresponding levels of reading matter. 3,680,229, Cl. 35-35.00r.

Settele, Helmut: *See—*
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Shaines, Alfred, to American Standard Inc. Method of preparing articles of pressed wood. 3,681,487, Cl. 264-109.000.

Shanks, Harry R., to Sears, Roebuck and Co. Food storage compartment for refrigerator. 3,680,941, Cl. 312-296.000.

Shapiro, Stephen I., to Union Carbide Corporation. Sample holder and transferring device for a centrifuge. 3,681,029, Cl. 23-259.000.

Sharman, John Charles, to G.K.N. Engineering Limited. Presses. 3,680,998, Cl. 425-394.000.

Shaw, Brian Herbert, to International Standard Electric Corporation. Coordinate table. 3,680,401, Cl. 74-89.150.

Shaw, Stuart Walter Ker; and Penrice, Peter John, to International Nickel Company, The. Nickel-chromium alloy for reformer tubes. 3,681,059, Cl. 75-134.00f.

Shaw-Stewart, David E., to Goldsworthy Engineering, Inc. Constant tension strand feeding system. 3,680,753, Cl. 226-25.000.

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Sherlock, Margaret H., to Schering Corporation. Glyceryl-n-(substituted phenyl) anthranilates. 3,681,394, Cl. 260-340.900.

Sherman, Roger M. Irrigation system. 3,680,787, Cl. 239-177.000.

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Shinnick, James P.; and Conroy, James F. Transthoracic cannula-type device for cardiopuemonary resuscitation. 3,680,544, Cl. 128-2.00r.

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Sidline, George B., to Ampex Corporation. Transport controller. 3,681,523, Cl. 178-6.60a.

Sidney, Fisher L. Suspended staging incorporating automatic welding equipment. 3,681,565, Cl. 219-126.000.

Siebol, George; and Rippy, Dorian E., to Olympic Screw & Rivet Corporation. Method of setting a lockbolt. 3,680,202, Cl. 29-520.000.

Siegwart, Robert V., to Heppenstall Company. Tiltable lifting tongs. 3,680,907, Cl. 294-103.0cg.

Siekierski, Jacques, to ITAP S/A-Industria Tecnica de Artefatos Plasticos Rua Prof. Celestino Bourroul. Method of manufacture of plastic bags and the improved bags resulting therefrom. 3,680,769, Cl. 229-58.000.

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Archer, Wesley L.; and Simpson, Elbert L., 3,681,469.

Simpson, Kenneth R., to General Electric Company. Camera tube with faceplate heating means. 3,681,637, Cl. 313-65.00r.

Sims, Clarence R. Floor cleaning device for attachment to a shoe. 3,680,170, Cl. 15-227.000.

Sinclair, Alex H.: *See—*
Otto, Robert J.; Sinclair, Alex H.; Reynolds, Ralph K.; and Neargardner, Robert F., 3,680,924.

Singer Company, The: *See—*
Goldstein, Murray S.; Lerman, Harold; Acker, Robert; and Ross, Herbert S., 3,680,355.
Peets, Robert S., 3,680,939.

Singer Company, The, mesne: *See—*
Hoffman, Jay; and Hohenstein, Robert M., 3,680,392.
Rogall, Herbert, 3,680,393.

Singhal, Gopal H., to Esso Research and Engineering Company. Isothiocyanatomethyl and thiocyanatomethyl hydantoins. 3,681,377, Cl. 260-309.500.

Singleton, Cecil W.; and Jones, Richard P., to Allegheny Ludlum Industries, Inc. Apparatus for leveling thin strip. 3,680,343, Cl. 72-161.000.

Sironi, Virginio, to Vibratechniques S.A. Variable amplitude vibrator, for example for the manufacture of moulded concrete products. 3,680,842, Cl. 259-1.000.

Sisson, Donald R.; and Hanson, Richard E., to Nelson, L. R., Mfg. Co., Inc. Water distribution in the operation of pivot move agricultural irrigation spinkler systems. 3,680,778, Cl. 239-100.000.

Sjovall, Stig Lennart, to Svenska Sockerfabriks Aktiebolaget. Root-crop harvesters. 3,680,638, Cl. 171-76.000.

Skagit Corporation: *See—*
McIntyre, Maurice J.; and Newton, John R., 3,680,721.

Skaw, Eugene Raymond: *See—*
Degenkolb, Robert Stephen; and Skaw, Eugene Raymond, 3,681,713.

Skelton, Robert F.; and Truax, Harry, to Mix-Mill, Inc., mesne. Apparatus and method for treating grains and legumes. 3,680,472, Cl. 99-235.00r.

Skoog, Ivan H., to Minnesota Mining and Manufacturing Company. Photographic silver halide emulsions containing couplers with fluoro-aliphatic-sulfonyloxy groups. 3,681,076, Cl. 96-100.000.

Slaats, Mathew A.; and Blessinger, James E., to Kimball Piano & Organ Co. Electronic organ voicing control mounted on voice tab. 3,681,507, Cl. 84-1.190.

Slattery, Robert E., to Atwood Vacuum Machine Company. Shielded striker for a vehicle latch. 3,680,902, Cl. 292-341.140.

Sliger, Dale E. Constant speed DC motor with interior field. 3,681,632, Cl. 310-46.000.

Slominski, Walter V.; Kitchen, John P.; and Mandusky, Jack C., to Hoover Ball and Bearing Company. Frame for box spring assembly. 3,680,157, Cl. 5-247.000.
Smith, Avery B., to Resource Control, Inc. Colorimetric indicator for the detection of nitrogen dioxide. 3,681,027, Cl. 23-232.00r.
Smith, Bill, to Continental Oil Company. Apparatus for controlling depth of a water-towed cable. 3,680,520, Cl. 114-235.00b.
Smith, Clarence T. Method and solution for maintaining biological activity in enzymes. 3,681,197, Cl. 195-63.000.
Smith, Gregory A., to Lyall Electric, Inc. Inc. Disconnect safety switch. 3,681,551, Cl. 200-161.000.
Smith, International, Inc.: *See—*
Dixon, James W.; and Crews, Samuel T., Jr., 3,680,647.
Garner, Lloyd L., 3,680,873.
Hughes, Robert Q.; and Garrett William R., 3,680,646.
Smith, James L., to Lau Incorporated. Transverse-flow blower and housing. 3,680,974, Cl. 415-54.000.
Smith, John C.: *See—*
Kamp, Ewald Albert; and Smith, John C., 3,680,175.
Smith Kline & French Laboratories: *See—*
Pfeiffer, Francis R., 3,681,480.
Smith Kline and French Laboratories: *See—*
Kaiser, Carl; and Zirkle, Charles L., 3,681,461.
Smith, Marvin G.: *See—*
Wright, Gerald T.; and Smith, Marvin G., 3,680,276.
Smith, Philip E., Jr.: *See—*
Wallace, Baird; and Smith, Philip E., Jr., 3,680,863.
Smith, Raymond P. Roller guide for boat trailer. 3,680,676, Cl. 193-42.000.
Smith, Richard K. Bathtub wrapper structure. 3,680,688, Cl. 206-46.00h.
Smith, Roger M.: *See—*
Olthoff, James A.; Smith, Roger M.; and Trittipoe, Jack H., 3,680,892.
Smith, Samuel E.: *See—*
Russell, George D.; and Smith, Samuel E., 3,680,862.
Smith, Wayne E.: *See—*
Galiano, Francis R.; Thackaberry, Samuel P.; Smith, Wayne E.; and Anderson, Raymond P., 3,681,216.
Smith, William F.; Mitchell, John H.; Edwards, William M.; and Cox, Phillip W., to Dow Chemical Company, The. Roll pump for highly viscous material. 3,680,975, Cl. 415-74.000.
Smock, George E., to Owens-Corning Fiberglas Corporation. Method for forming an integrated mass. 3,681,157, Cl. 156-62.200.
Smura, Edwin J., to Xerox Corporation. Recording apparatus. 3,681,777, Cl. 346-74.0cr.
Snee, William J., Jr.: *See—*
Lemper, Herbert; and Snee, William J., Jr., 3,680,400.
Snelling, Christopher, to Xerox Corporation. Photoelectrophoretic imaging by phosphorescence. 3,681,221, Cl. 204-181.000.
Snorkel Fire Equipment Company: *See—*
Langley, Robert E., 3,680,713.
Snow, Charles L. Cartridge type filter and method of making same. 3,680,709, Cl. 210-494.000.
Snyder, Carl R., to Esquire Inc. Controlled high voltage lighting system for gaseous-discharge lamps. 3,681,653, Cl. 315-106.000.
Soberski, George, to Eaton Yale & Towne, Inc. Temperature responsive idling speed control device for internal combustion engine. 3,680,533, Cl. 123-117.00r.
Sobrefina SA: *See—*
Ignell, Rolf Lennart, 3,680,996.
Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Sarati, Luigi, 3,681,694.
Societe a Responsabilite limitee dite SERAM: *See—*
Bourgeois, Jacques, 3,680,586.
Societe Anonyme des Entreprises: *See—*
Roulet, Jean; and Cimadevilla, Armand, 3,680,275.
Societe anonyme dite: Laboratoire Roger Bellon: *See—*
Pesson, Marcel, 3,681,330.
Societe des Procedes Modernes d'Injection Sopromi: *See—*
Monpetit, Louis; Huber, Robert; and Ufnalewski, Jacek, 3,680,782.
Societe d'Etudes et de Development des Aerogliseurs Marins terrestrees et Amphibies S.E.D.A.M.: *See—*
Marchetti, Charles Joseph; and Faure, Marc Henri Jean, 3,680,657.
Societe en nom collectif "Science Union et Cie, Societe Francaise de Recherche Medicale': *See—*
Malen, Charles; and Pascaud, Xavier, 3,681,499.
Societe Lignes Telegraphiques et Telephoniques: *See—*
Chiron, Bernard; and Duffau, Louis, 3,681,716.
Societe Nationale des Petroles d'Aquitame: *See—*
Lucas, Georges; and Viallet, Claude, 3,681,217.
Lucas, Georges; and Viallet, Claude, 3,681,218.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Holz, Robert Gustave; and Braun, Adolf, 3,680,363.
Societe Nouvelle des Ateliers de Venissieux: *See—*
Dousset, Remy, 3,680,728.
Societe Rhodiaceta: *See—*
Michel, Buzano, 3,680,301.
Societe Technique de Pulverisation: *See—*
Boris, Michel, 3,680,790.
Soifer, Martin T.: *See—*
Zaid, Melvin; Soifer, Martin T.; Darigo, Julius; and Robinson, Russell S., 3,680,485.
Sola Basic Industries, Inc.: *See—*
Elkow, Steven A., 3,680,848.
Holmquest, John C., 3,681,678.
Solberg, Olav: *See—*
Bognaes, Ragnar; and Solberg, Olav, 3,680,323.
Solco Basel, AG: *See—*
Von Castelmur, Hans, 3,681,383.
Solo Kleinmotoren GmbH: *See—*
Emmerich, Heinz; and Bulk, Eggert, 3,680,608.
Soltronics, Inc., mesne: *See—*
Watson, Fred A., 3,681,611.
Somlo, Tibor; and Orban, Ivan, to Ciba-Geigy AG. Process for the production of 2,5-diamino-3, 6-dihalogeno-p-benzoquinones. 3,681,403, Cl. 260-396.00r.
Sommer, G. M., Co., Inc.: *See—*
Sommer, Gordon M., 3,680,666.
Sommer, Gordon M., to Sommer, G. M., Co., Inc. Motor brake unit. 3,680,666, Cl. 188-170.000.
Sony Corporation: *See—*
Baba, Hideo; and Gando, Masayoshi, 3,681,146.
Kobayashi, Isamu, 3,681,668.
Suzuki, Tadao, 3,681,659.
Sorenson, Gerald T., to Systems Design Company, Inc. Valve. 3,680,593, Cl. 137-625.480.
Sorenson, James L.: *See—*
Pannier, Karl A., Jr.; Reynolds, Gordon S.; and Sorenson, James L., 3,680,560.
Sorenson, Richard D.: *See—*
James, Robert C.; Vogel, Walter H.; and Sorenson, Richard D., 3,680,446.
Sorrells, John R.: *See—*
Brown, Robert G.; Sorrells, John R.; and Trent, Joseph E., 3,680,855.
Sorvall, Ivan, Inc.: *See—*
Blum, Josef, 3,680,420.
Sosnowski, Thomas Patrick: *See—*
Larsen, Arthur Bertel; Sosnowski, Thomas Patrick; and Townsend, Richard Lee, Jr., 3,681,519.
Soteropulos, Gust, to Deere & Company. Corn harvesting machine. 3,680,291, Cl. 56-14.300.
Southworth Machine Company: *See—*
Thompson, Gene C.; Radomski, Joseph E.; and Wilson, David E., 3,680,220.
Southworth, Ronald W., to U.S. Plywood-Champion Papers Inc. Board transfer device. 3,680,692, Cl. 209-74.00m.
Spaenig, Hermann: *See—*
Adolphi, Heinrich; Steimmig, Anna; and Spaenig, Hermann, 3,681,375.
Sparks, Harold R., to Knock & Associates, mesne. Lock washer. 3,680,619, Cl. 151-36.000.
Sparrow, Robert E.: *See—*
Pask, Arthur H.; Sparrow, Robert E.; and Boulanger, Roger J., 3,681,536.
Special Engineering Development Limited: *See—*
Hargreaves, Edward William, 3,680,447.
Speed, Roy A. Bedding support apparatus. 3,680,158, Cl. 5-319.000.
Spei, Brigitte: *See—*
Wagenknecht, Rudolf; Gotta, Hans; Spei, Brigitte; and Gottwald, Karl-Heinz, 3,681,148.
Spence, Lewis C. Circuit and method for enhancement of signal-noise ratio. 3,681,705, Cl. 330-149.000.
Spencer, Robert F. Toy glider. 3,680,253, Cl. 46-79.000.
Sperline, Paul D.: *See—*
Savage, Paul E.; and Sperline, Paul D., 3,680,539.
Sperry Rand Corporation: *See—*
Pettibone, Raymond B.; and Niemiec, Albin J., 3,680,990.
Ricci, Vincent C.; and Simon, William F., 3,681,615.
Sperry Rand Limited: *See—*
Levy, Joseph Peppo, 3,681,257.
Spescha, Gelli Anton, to Elektrophysikalische Anstalt Bernhard Berghaus. Method of monitoring the electrical behaviour of a high-intensity glow discharge for metallurgical processes. 3,681,662, Cl. 317-31.000.
Spilner, Allan John, to Rohm and Haas Company. Thermoplastic molding compositions. 3,681,475, Cl. 260-876.00r.
Spivack, John Denon: *See—*
Dexter, Martin; Spivack, John Denon; and Steinberg, David Herbert, 3,681,364.
Dexter, Martin; Spivack, John Denon; and Steinberg, David Herbert, 3,681,431.
Spivy, Paul L., to Dayco Corporation. Endless track. 3,680,925, Cl. 305-38.000.
Spofa, Spojene Podniky Pro Zdravotnickou Vyrobu: *See—*
Semonsky, Miroslav; and Zikan, Viktor, 3,681,497.
Springer, Charles H. Insect electrocutor. 3,680,251, Cl. 43-112.000.
Springer, Edward M., to Nicolls, Keith K. Fluid spreading apparatus. 3,680,783, Cl. 239-101.000.
Spruth, Wilhelm G.: *See—*
Schuenemann, Claus H.; and Spruth, Wilhelm G., 3,681,761.
Square D Company: *See—*
Lehman, Lewis M.; and Koeppler, John A., 3,681,553.
Srinivasan, Sundaresa: *See—*
Mikovsky, Richard J.; and Srinivasan, Sundaresa, 3,681,021.

St. John, Ward A. Internal combustion turbine engine. 3,680,308, Cl. 60-39.340.

Staats, William R.: *See—*
Kweller, Esher R.; Staats, William R.; and Rosenberg, Robert B., 3,681,002.

Stabe, Heinrich: *See—*
Haas, Carl; and Stabe, Heinrich, 3,681,692.

Stache, Ulrich: *See—*
Radscheit, Kurt; Kelkheim, Taunus; Stache, Ulrich; Haede, Werner; Hofheim, Taunus; Fritsch, Werner; Neuenhain, Taunus; and Lindner, Ernst, 3,681,344.

Stagg, John: *See—*
Preston, Leslie Raymond; Pope, Victor James; Stagg, John; and Green, Ronald Sydney, 3,681,177.

Stairs, Henry Marshall, to American Standard Inc. Mounting structure for toilet bowl or the like. 3,680,154, Cl. 4-252.00r.

Staley, William E.; and Ames, Stuart L., to Allegheny Ludlum Industries, Inc. Method of siliconizing. 3,681,152, Cl. 148-113.000.

Stamets, Wm. K., Company: *See—*
Hiney, Leonard L., 3,680,413.

Stancari, Franco, to AMF Incorporated. Cigarette packaging apparatus. 3,680,280, Cl. 53-59.000.

Standard Oil Company: *See—*
Grutsch, James F.; Mallatt, Russell C.; and Mowers, Robert G., 3,680,847.
Ridgway, John A., Jr., 3,681,200.

Standard Oil Company (Indiana): *See—*
Lee, Richard J., 3,681,463.

Standiford, Fred W. Locking structure for securing wearing apparel. 3,680,149, Cl. 2-27.000.

Stangl, Anton: *See—*
Obermaier, Georg; and Stangl, Anton, 3,680,806.

Stanley, Richard Carl, to Midwestern Specialties, Ltd. Method and means for welding pipe sections. 3,681,560, Cl. 219-61.

Stanner, Donald, to General Motors Corporation. Vehicle body closure panel. 3,680,910, Cl. 296-29.000.

Stapp, Paul R., to Phillips Petroleum Company. Production of 1,3-alkadienes. 3,681,471, Cl. 260-681.

Starcher, Paul Spencer; and Ash, Bertrand Donahay, to Union Carbide Corporation. Preparation of bicyclo (2.2.1)hept-2-en-ylmethyl acrylate. 3,681,438, Cl. 260-486.00r.

Starp, Franz W. R., to Prontor-Werk Alfred Gauthier, G.m.b.H. Motor driven diaphragm shutter. 3,680,460, Cl. 95-53.0ea.

Stasko, William: *See—*
Dulis, Edward J.; Kasak, August; and Stasko, William, 3,681,058.

Staubli Ltd.: *See—*
Palau, Joseph, 3,680,601.

Staudacher, Gerald R.; Lane, George A.; and Kott, Alan C., to Dow Chemical Company, The. Annular flare grains. 3,680,483, Cl. 102-37.800.

Stauffer Chemical Company: *See—*
Baker, Don R., 3,681,439.
Gutman, Arnold D., 3,681,476.
Gutman, Arnold D., 3,681,478.
Gutman, Arnold D., 3,681,479.
Kohl, Willibald F.; and Ellinger, Rudolph H., 3,681,091.
Mirviss, Stanley B., 3,681,455.

Steeley, Roy S., to Dixie-Marco, Inc. Security door for vending machines. 3,680,937, Cl. 312-138.000.

Steimmig, Anna: *See—*
Adolphi, Heinrich; Steimmig, Anna; and Spaenig, Hermann, 3,681,375.

Stein, Robert, 25% to Nolte, Albert C., Jr. Steam jet refrigeration apparatus. 3,680,327, Cl. 62-226.000.

Steinberg, David Herbert: *See—*
Dexter, Martin; Spivack, John Denon; and Steinberg, David Herbert, 3,681,364.
Dexter, Martin; Spivack, John Denon; and Steinberg, David Herbert, 3,681,431.

Steinman, Charles. Protective magnifying element for toenail clippers. 3,680,210, Cl. 30-28.000.

Stengl, Stephen. Golf ball gun with valve adjustment and trigger linkage. 3,680,540, Cl. 124-11.000.

Stepanek, Frank E.: *See—*
Lelyk, William; and Stepanek, Frank E., 3,680,731.

Stephenson, Robert L., to Allied Chemical Corporation. Vehicle safety assembly. 3,680,884, Cl. 280-150.0ab.

Stephenson, Robert L.; and Loomba, Yogi, to Allied Chemical Corporation. Mandatory three point seat belt tongue system. 3,680,914, Cl. 297-389.000.

Stern, David R.: *See—*
Liu, Tung; and Stern, David R., 3,680,698.

Sternbach, Henryk: *See—*
Earley, James Valentine; Fryer, Rodney Ian; Ye-Fong Ning, Robert; and Sternbach, Henryk, 3,681,341.

Sternberg, Hubert H. A., to Heidelberger Druckmaschinen Aktiengesellschaft. Frictional gear backlash eliminating means in sheet fed rotary printer. 3,680,481, Cl. 101-232.000.

Stetter, Gunter, to Messerschmitt-Bolkow-Blohm Gesellschaft mit Beschrankter Haftung. Pyrotechnic emitter. 3,680,484, Cl. 102-87.000.

Stevels, William A., to Aldrich Machine Works. Textile picker having means for varying feed of a web passing therethrough. 3,680,192, Cl. 19-240.000.

Stevens, Arthur Dexter, to Marconi Company Limited, The. Fault location and reconfiguration in redundant data processors. 3,681,578, Cl. 235-153.000.

Stevens, J. P., & Co., Inc.: *See—*
Sello, Stephen B., 3,681,060.
Sello, Stephen B.; and Egrie, Paul H., 3,681,124.

Stewart, Wilton A.; and Yu, Ying-Nien, to Intergraphic Inc. Light with multiple axis tilting, and tension control of traveling illuminated media. 3,680,805, Cl. 242-67.400.

Stewart-Warner Corporation: *See—*
Bjorn, Thomas E., 3,680,390.

Stoldt, Erwin F.: *See—*
Kraschnewski, Melvin W.; and Stoldt, Erwin F., 3,680,928.

Stone, Jerry F.: *See—*
Findlay, Hugh T.; and Stone, Jerry F., 3,681,186.

Stone, John Alexander; Lamster, Hal Bernhard; Baker, Charles L.; and Bakiras, Sprio, to Time Sharing Sciences, Inc. Computer independent concentrators. 3,681,755, Cl. 340-172.500.

Stoop, Egbertus P., to International Business Machines Corporation. Rotary punch device with push-pull chip removal. 3,680,419, Cl. 83-98.000.

Stork-Amsterdam, N.V.: *See—*
Anselrode, Lodweijk, 3,681,208.

Strange, Lyle H. Track laying equipment and carrier therefor. 3,680,720, Cl. 214-38.00r.

Strauss, Karl-Peter, to Rollei-Werke Franke & Heidecke. Capacitor overcharge protection circuit. 3,681,672, Cl. 320-1.00.

Stroezel, Reinhold: *See—*
Kirn, Manfred; Hahner, Reinhard; Stroezel, Reinhold; Hettich, Alfred; and Burklin, Max, 3,680,642.

Strohschneider, Walter, to Zellweger Ltd. System for identifying articles. 3,681,571, Cl. 235-61.70r.

Stromberg, Sanford E., to Textron, Inc. Electrophoretic coating method. 3,681,224, Cl. 204-181.000.

Suburban Metal Industries Limited: *See—*
Brucker, Henry J., 3,680,711.

Sud-Atlas-Werke G.m.b.H.: *See—*
Tupaj, Manfred Paul; and Engert, Heinz, 3,680,871.

Suda, Toshi; and Kobayashi, Hisanori, to Nippondenso Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel supply device for internal combustion engines. 3,680,537, Cl. 123-140.0mc.

Suekane, Mikio; and Satake, Chikako, to CPC International Inc. Method of treating yeast. 3,681,195, Cl. 195-4.000.

Suess, Rudolf: *See—*
Lindenmann, Adolf; and Suess, Rudolf, 3,681,361.

Sugihara, Kunihiko: *See—*
Nakajima, Yasuo; Hayashi, Yoshimasa; Yoshimura, Toru; Sugihara, Kunihiko; and Nagumo, Shin-Ichi, 3,680,318.

Sugiyama, Kunro: *See—*
Hisada, Takeo; Nakajima, Fumio; Nishi, Takeshi; and Sugiyama, Kunro, 3,680,579.

Suhara, Yasuji: *See—*
Umezawa, Hamao; Maeda, Kenji; and Suhara, Yasuji, 3,681,398.

Sullivan, Paul E.: *See—*
Herbert, John T.; Sullivan, Paul E.; and Vitt, Stanley P., 3,680,895.

Sullivan, Robert H., to Du Pont de Nemours, E. I., and Company. Preparation of para nitrobenzoic acids and 4'-nitro-4-biphenycarboxylic acids. 3,681,444, Cl. 260-515.00r.

Sumikama, Sadao, to Showa Denko K.K. Heat flow meter. 3,680,374, Cl. 73-190.00h.

Sumitomo Chemical Co., Ltd.: *See—*
Sagawa, Seiji; Kunihiro, Haruo; Kimura, Osamu; and Inoue, Masatoshi, 3,681,371.

Sumitomo Chemicals Co., Ltd.: *See—*
Yagi, Yoshiharu; Kobayashi, Akira; Hirata, Itsuro; and Sato, Hiroshi, 3,681,315.

Sumiyoshi, Masaharu; Ito, Osamu; Wakamatsu, Hisato; Kato, Takaaki; and Kawai, Hisasi, to Toyoto Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho. Actuating oil pressure control system for torque converter automatic transmission. 3,80,410, Cl. 74-866.000.

Summers, John, & Sons Limited: *See—*
Jackson, Albert Edward, 3,681,062.

Summers, McGarvey G. Strain gage monitor. 3,680,365, Cl. 73-88.50r.

Sun Oil Company: *See—*
Bennett, John D., 3,680,633.
Berry, Holland J.; Hardy, William C.; and Zadow, Dale W., 3,680,635.
Berry, Holland J.; Hardy, William C.; and Zadow, Dale W., 3,680,636.
Felton, George F., Jr., 3,680,356.
Hollstein, Elmer J., 3,681,384.
Hollstein, Elmer J.; and Scott, Kenneth A., 3,681,387.
Mills, Ivor W.; and Dimeler, Glenn R., 3,681,233.
Mills, Ivor W.; Dimeler, Glenn R.; and Kirk, Merritt C., Jr., 3,681,279.
Young, Einar T., 3,680,407.

Sun Oil Company (Delaware): *See—*
Mason, Charley Mack, 3,681,028.

Sun Oil Company of Pennsylvania: *See—*
Jolly, Samuel E.; Kohn, Edward M.; and Tench, John D., 3,681,117.

Sundberg, Bertil J.; and Luksch, Andreas; deceased (by Johnson, David R.; executor), to Brunswick Corporation. Machines for making metal fibril compacts. 3,680,183, Cl. 29-4.500.

Sussman, Arthur; and Nitzberg, Jack, to Bendix Corporation, The. MOde annunciation display means for aircraft instrument panels. 3,680,948, Cl. 350-96.00b.

Sutton, David A., to Information Magnetics Corporation. Air cooled linear motor. 3,681,630, Cl. 310-16.000.

Suzuki, Masataka; and Shibata, Minoru, to Mitsubishi Denki Kabushiki Kaisha. Electronic cooking apparatus. 3,681,557, Cl. 219-10.550.

Suzuki, Tadao, to Sony Corporation. Amplifier protective circuit. 3,681,659, Cl. 317-16.000.

Svenska Sockerfabriks Aktiebolaget: *See—*
Sjovall, Stig Lennart, 3,680,638.

Svensson, Gustav Einar Wilhelm. Inertia reel safety harness for use in vehicles. 3,680,808, Cl. 242-107.400.

Swanson, Arden E.: *See—*
Wellan, Wayne G.; Converse, John O.; and Swanson, Arden E., 3,680,285.

Swanson, Carl Loyal W.: *See—*
McCoy, Frederic C.; and Swanson, Carl Loyal W., 3,681,348.

Swedish Crucible Steel Company: *See—*
James, Edgar T.; and Magri, Dominic, 3,680,568.

Sweeney, Richard F.; and Price, Alson K., to Allied Chemical Corporation. Quaternary ammonium compounds. 3,681,413, Cl. 260-404.500.

Sweeney, William M., to Texaco Inc. Pour depressant compositions of cracked ethylene/propylene/diene terpolymers. 3,681,302, Cl. 260-80.780.

Sweet, Douglas W.: *See—*
Beyerlein, David G.; and Sweet, Douglas W., 3,680,655.

Swett, James B., to Dart Industries Inc. Mold for congealable comestibles. 3,680,828, Cl. 249-134.000.

Switchcraft, Inc.: *See—*
Bailey, James R., 3,681,552.

Sybron Corporation: *See—*
Heit, Allyn Harold; and Williamson, James Norris, 3,681,213.

Sykes-Pickavant Limited: *See—*
Taylor, David John, 3,680,361.

Symington, Donald Fraser. Device for throwing hardened steel balls. 3,680,186, Cl. 29-90.000.

Symmank, William D., to Case, J. I., Company. Mobile excavator with adjustable boom. 3,680,722, Cl. 214-138.00r.

Syntex Corporation: *See—*
Crabbe, Pierre; and Velarde, Esperanza, 3,681,410.
Edwards, John A.; and Fried, John H., 3,681,427.
Fried, John H., 3,681,391.
Nelson, Peter H., 3,681,432.

Systems Design Company, Inc.: *See—*
Sorenson, Gerald T., 3,680,593.

Szulagyi, Bela A.; Brent, Allan L.; and Greguss, Pal, to Modern Pollution Control, Inc. Incinerator. 3,680,501, Cl. 110-8.00a.

Szupillo, Raymond E., to Corning Glass Works. Microcircuit mask and method. 3,681,227, Cl. 204-192.000.

Tabata, Yoneho; Ozimui, Chihiro; and Otani, Sugio, to Asahi Kasei Kogyo Kabushiki Kaisha. Production of carbon fibers. 3,681,023, Cl. 23-209.400.

Tabuchi, Ichiro; and Harita, Yasuhiro, to Mitsui Shipbuilding and Engineering Co., Ltd. Apparatus for fixing containers in the ship. 3,680,518, Cl. 114-72.000.

Tajima, Hiroaki: *See—*
Mori, Ryoichi; Tajima, Hiroaki; and Tsuji, Yoshio, 3,681,616.

Takada, Sadaharu, to Seibu Gomu Kagaku Kabushiki Kaisha. Fender with cushion board. 3,680,851, Cl. 267-140.000.

Takamatsu, Toshiaki; and Fukada, Eiichi, to Rikagaku Kenkyusho. Method for determining transition temperature of dielectric. 3,680,358, Cl. 73-17.00r.

Takano, Hirotugu; and Inoue, Toshitsugu, to Matsushita Electric Industrial Co., Ltd. Automatic lathe. 3,680,415, Cl. 82-19.000.

Takashima, Masaru; Saito, Masao; Matsuyama, Shigeru; and Ueki, Kazufusa, to Aikoh Co., Ltd. Desulfurizing agent for molten pig iron. 3,681,051, Cl. 75-58.000.

Takashima, Seiichi: *See—*
Wada, Yoshiyo; Kinjo, Hisao; Takashima, Seiichi; and Akuwa, Fumio, 3,681,525.

Takata, Victor, to Artisan Industries Inc. Turbine drive for photographic film processing machines. 3,680,803, Cl. 242-55.010.

Takeda Chemical Industries, Ltd.: *See—*
Yokoo, Makoto; Keshi, Akizo; Hashimoto, Norishige; and Nakahara, Shigenobu, 3,681,271.

Takeda, Toshihiko: *See—*
Murata, Norio; Takeda, Toshihiko; Sakai, Hirochika; and Matsuda, Nobuyuki, 3,680,653.

Takeuchi, Tomio: *See—*
Umezawa, Hamao; Maeda, Kenji; Okami, Yoshiro; and Takeuchi, Tomio, 3,681,491.

Takeya, Kenji; Sekiguchi, Hideto; Tanahashi, Kunio; and Tsuge, Junji, to Japan Exlan Company Limited. Acrylonitrile composition improved in yellowness and brightness and production of fibers therefrom. 3,681,275, Cl. 260-23.00r.

Takumi, Kenji; Yamamoto, Hisashi; and Ikegami, Hidetsugu, 1/2% to Kabushiki Kaisha Hitachi Seisakusho, a joint stock Company & Hidesugu Ikegami. Sector-typed charged particle energy analyser. 3,681,599, Cl. 250-41.900.

Tallinskaya bolnitsa Tynismyae: *See—*
Seppo, Arnold Ivanovich, 3,680,553.

Tamalate, Tokutaro: *See—*
Yagi, Eiichi; Kojima, Kenko; Ikeda, Hisayuki; Yauchi, Shiro; Shimizu, Tsutomu; Tamalate, Tokutaro; and Ikegawa, Hiroyuki, 3,680,841.

Tanabe, Kenzo, to Matsushita Electric Industrial Co., Ltd. System for minimizing fluctuations of television signal. 3,681,522, Cl. 178-6.6tc.

Tanahashi, Kunio: *See—*
Takeya, Kenji; Sekiguchi, Hideto; Tanahashi, Kunio; and Tsuge, Junji, 3,681,275.

Tanaka, Frederick K.; Mueller Fred S.; and Riddle, John B., to Micro-Magnetic Industries, Inc. Bulk coin dispenser. 3,680,566, Cl. 133-3.000.

Tanaka, Makoto: *See—*
Nishiyama, Shizuo; and Tanaka, Makoto, 3,681,527.

Tanigushi, Kyuhei: *See—*
Yoneda, Shoji; Agari, Taiichiro; Tanigushi, Kyuhei; and Goto Tetsuo, 3,680,515.

Tarmann, Bruno; and Vonbank, Heinrich, to Gebr. Bohler & Co. Aktiengesellschaft. Improvements in or relating to processes of manufacturing rolled stock from products of continuous casting processes. 3,680,623, Cl. 164-76.000.

Tarry, Robert James; Kriellaars, Johannes C.; and Lord, Ronald D., to Cae Industries Ltd. Capacitive moisture measurement. 3,681,685, Cl. 324-61.000.

Tasker Industries, Inc.: *See—*
Hanby, Fredrick E., 3,681,711.

Tate, Roger W.; and Wilcox, Richard L., to Delavan Manufacturing Company. Eccentric spiral swirl chamber nozzle. 3,680,793, Cl. 239-468.000.

Taverne, Jules L., to Deere & Company. Crop conditioner with baffle of fluffer means. 3,680,290, Cl. 56-1.000.

Taylor, Carl S.: *See—*
DeCardi, Pedro; Taylor, Carl S.; and Roberts, Geoffrey L., 3,680,885.

Taylor, David John, to Sykes-Pickavant Limited. Pressure testing device. 3,680,361, Cl. 73-49.200.

Taylor, Jack G.; and Gallo, Mario S., to Globe Illumination Company. Lighting fixtures. 3,681,596, Cl. 240-147.000.

Taylor, William I.: *See—*
Mookherjee, Braja D.; and Taylor, William I., 3,681,395.
Mookherjee, Braja D.; and Taylor, William I., 3,681,396.

TDK Electronics Company Ltd.: *See—*
Nagazono, Yasuro; and Kamijo, Terufumi, 3,681,137.

Teale, Richard William, to U.S. Philips Corporation, mesne. Device for detecting and/or recording electromagnetic radiation including an active magnetic element a parameter of which can be changed by the radiation. 3,681,602, Cl. 250-83.30r.

Technicon Instruments Corporation: *See—*
Engelhardt, Alvin, 3,680,967.
Gasiunas, Donatas V., 3,681,577.
Watts, Leonard, 3,680,624.

Teeters, James L.: *See—*
Clark, Wallace; and Teeters, James L., 3,680,522.

Teijin Limited: *See—*
Kadokura, Sadao; and Miura Kazuchika, 3,681,670.

Tektronix, Inc.: *See—*
Moriyasu, Hiro, 3,681,617.

Teledyne, Inc.: *See—*
Amesbury, Maurice G.; and Van Vonderen, Jacobus, 3,680,461.
Gwathmey, Edward S.; and Embree, John M., 3,681,580.

Telford, Bruce C.: *See—*
Ducksbury, Alfred N.; and Telford, Bruce C., 3,681,205.

Temple University: *See—*
Elkin, Samuel; and Lieberman, Hillel, 3,681,363.

Ten Brook, Mildred: *See—*
Ten Brook, Walter R., 3,680,751.

Ten Brook, Walter R.; deceased (by Ten Brook, Mildred; administratrix). Bracelet for carrying medicinal pills. 3,680,751, Cl. 224-28.00b.

Tench, John D.: *See—*
Jolly, Samuel E.; Kohn, Edward M.; and Tench, John D., 3,681,117.

Tencza, Albert D.: *See—*
Ogden, George D.; and Tencza, Albert D., 3,680,943.

Tenneco Inc.: *See—*
Du Bois, Bert, 3,680,660.

Teodoru, Aurel D.: *See—*
Ionescu, Ieodor D.; Uta, Londra Gheorghe F.; and Teodoru, Crizantemelor Aurel D., 3,681,214.

Terai, Masaaki: *See—*
Matsuda, Ryoichi; Kawashima, Isao; and Terai, Masaaki, 3,681,538.

Teraji, Tsutomu: *See—*
Kurita, Masaru; Saito, Yoshihisa; and Teraji, Tsutomu, 3,681,328.

Terakawa, Takashige, to Tokyo Keiki Seizosho Co., Ltd. Impedance transformers for microwave transmission lines. 3,681,714, Cl. 333-21.00r.

Terjenian, Leo: *See—*
Domenichini, Carlo P.; and Terjenian, Leo, 3,681,652.

Termont, Charles George, to Deere & Company. Functional counterweight system for a track laying tractor. 3,680,651, Cl. 180-9.400.

Terrill, James R.; and Dzierski, Stanley F., to Aluminum Company of America. Fluxless ultrasonic soldering of aluminum tubes. 3,680,200, Cl. 29-500.000.

Terry, Reese S., Jr., to Cordis Corporation. D.C. to D.C. converter. 3,681,674, Cl. 321-2.000.

Tesla, narodni podnik: *See—*
Mack, Zdenek, 3,681,648.

Tetenbaum, Marvin T., to Allied Chemical Corporation. Nitroalkyl hexahydroazepines useful as insecticides. 3,681,339, Cl. 260-239.0be.

Texaco Inc.: *See—*
Binkley, Frederick H., Jr.; Lanier, Eldred S., Jr.; and Barrilleaux, Robert G., 3,680,389.
Foucher, Walter D., Jr.; and Norman, Thomas W., 3,681,260.
McCoy, Frederic C.; and Swanson, Carl Loyal W., 3,681,348.
Paap, Hans J.; Pitts, Robert W.; and Mueller, Allen H., 3,681,601.
Roberts, Eric A., 3,681,657.
Sweeney, William M., 3,681,302.

Texas Instruments, Incorporated: *See—*
Johnson, Clair A., 3,680,199.

Textron, Inc.: *See—*
Stromberg, Sanford E., 3,681,224.

Thackaberry, Samuel P.: *See—*
Galiano, Francis R.; Thackaberry, Samuel P.; Smith, Wayne E.; and Anderson, Raymond P., 3,681,216.

Theimer, Ernst T., to International Flavors & Fragrances Inc. Saturated indane derivatives and processes for producing same. 3,681,464, Cl. 260-586.

Theissen, Donald R., to Minnesota Mining and Manufacturing Company. Moisture-resistant solar control film. 3,681,179, Cl. 161-4.000.

Theurer, Josef: *See—*
Plasser, Franz; and Theurer, Josef, 3,680,486.

Thevenaz, Jean, to Paillard S.A. Kinematographic apparatus. 3,680,811, Cl. 242-189.000.

Thewalt, Klaus: *See—*
Junghahnel, Rudolph; Renckhoff, Gustav; and Thewalt, Klaus, 3,681,496.

Thiele, Kurt: *See—*
Bebenburg, Walter V.; and Thiele, Kurt, 3,681,366.

Thiokol Chemical Corporation: *See—*
Cox, Duane M., 3,680,788.

Thomas & Betts Corporation: *See—*
Wunder, Richard J., 3,680,352.

Thomas French & Sons Limited: *See—*
Foggo, James Douglas, 3,681,158.

Thomas, Robert M.; and Levek, Robert P., to Great Lakes Chemical Corporation. Process for the production of halogenated alcohols. 3,681,468, Cl. 260-633.000.

Thommen, Hans: *See—*
Schwieter, Ulrich; Thommen, Hans; and Weiser, Harald, 3,681,082.

Thompson, Alvin E., to Philco-Ford Corporation. Push-button key assembly. 3,680,394, Cl. 74-10.330.

Thompson, Dallas Glenn, 1/2% to Koerner, William B. Toothbrush. 3,680,168, Cl. 15-176.000.

Thompson, Gene C.; Radomski, Joseph E.; and Wilson, David E., to Southworth Machine Company. Sheet winding and turning method and system. 3,680,220, Cl. 34-23.000.

Thompson, John A.; and Wisdom, William H., said Thompson assor. to said Wisdom, William H. Portable rug dyeing machine and method. 3,681,006, Cl. 8-149.100.

Thompson, Philip H. Practice device. 3,680,230, Cl. 35-74.000.

Thomson, Ernest F., to K M S Industries, Inc. Headset with sheathed insulated-conductors for connection of earphones. 3,681,540, Cl. 179-156.000.

Thomspon, P. D. Rural mail box. 3,680,773, Cl. 232-17.000.

Thonnes, Martin: *See—*
Witten-Annen, Hans Lewer; Dust, Hanspeter; and Thonnes, Martin, 3,681,246.

Thornton-Trump, Walter Edward. Low level washing and dusting apparatus for aircraft and the like. 3,680,164, Cl. 15-21.00e.

Thurston, Warren M., to Atomic Energy of Canada Limited. Sampling device for mass spectrometric analysis. 3,681,598, Cl. 250-41.9.

Tihanyi, Bela: *See—*
Bergerhoff, Gunter; Tihanyi, Bela; Falbe, Jurgen; and Weber, Jurgen, 3,681,435.
Bergerhoff, Gunter; Tihanyi, Bela; Falbe, Jurgen; Weber, Jurgen; and Weisheit, Werner, 3,681,477.

Time Sharing Sciences, Inc.: *See—*
Stone, John Alexander; Lamster, Hal Bernhard; Baker, Charles L.; and Bakiras, Sprio, 3,681,755.

Timmerman, Daniel Maurice; Verhille, Karel Eugeen; and Van Paesschen, August Jean, to Agfa Gevaert N.V. Electroconductive layers of water insoluble copolymers of styrene and styrene sulfonic acid or salts for use in recording materials. 3,681,070, Cl. 96-1500.

Tinney, Joseph, to Bendix Corporation, The. Image intensifier using radiation sensitive metallic screen and electron multiplier tubes. 3,681,606, Cl. 250-213.0vt.

Tipton, Joe D.: *See—*
Mayer, James R.; and Tipton, Joe D., 3,680,412.

Tirpak, Michael R.; and Rendleman, Harold A., to Richardson Company, The. Transparent, high heat polystyrenes. 3,681,305, Cl. 260-80.780.

Titchenal, Oliver R.; Widiger, Aimar T.; and Yurcisin, Robert A., to Dow Chemical Company, The. Fresh meat packaging. 3,681,092, Cl. 99-174.

Todd, Alec: *See—*
Chakrabarti, Jiban Kumar; and Todd, Alec, 3,681,332.

Todd, Alexander Henry: *See—*
Leigh, Thomas; and Todd, Alexander Henry, 3,681,359.

Todd, Gary P. Analog computer for compression schedules. 3,681,585, Cl. 235-184.

Todd, Peter Frank: *See—*
Pioli, Alexander Joseph Peter; Hollyhead, William Brian; and Todd, Peter Frank, 3,681,317.

Toeppen, Thurston H.; and Sanger, David M., to General Signal Corporation. Thermal detector. 3,681,732, Cl. 337-409.000.

Tokico Ltd.: *See—*
Hisada, Takeo; Nakajima, Fumio; Nishi, Takeshi; and Sugiyama, Kunro, 3,680,579.

Tokura, Susumu: *See—*
Matsui, Masao; Tokura, Susumu; and Yamabe, Masahiro, 3,681,189.

Tokutomi, Seijiro: *See—*
Uno, Naoyuki; and Tokutomi, Seijiro, 3,680,457.
Uno, Naoyuki; and Tokutomi, Seijiro, 3,681,649.

Tokyo Keiki Seizosho Co., Ltd.: *See—*
Terakawa, Takashige, 3,681,714.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Kamei, Taketo; and Miyazaki, Kouichi, 3,681,639.
Kubo, Moritada; Shigehara, Masamichi; and Yasui, Shozo, 3,681,583.

Tollinger, James, to Ithaca Gun Company Incorporated. Semi-automatic shotgun having rotary and sliding breech block. 3,680,433, Cl. 89-185.000.

Tomy Kogyo Co., Ltd.: *See—*
Arai, Toshikatsu, 3,680,777.

Tonsfeldt, Wayne S., to Alloway Manufacturing Inc., mesne. Row crop cultivator. 3,680,648, Cl. 172-159.000.

Toombs, Peter Alan Birrell, to International Standard Electric Corporation. Glass-clad wire gas discharge display matrix. 3,681,655, Cl. 315-169.00r.

Toomey, Francis J. Hydraulic emergency brake system. 3,680,314, Cl. 60-54.50e.

Toothman, Lawrence R.: *See—*
Heinrichs, Frank W., Jr.; Polasky, Alex F.; Honey, Charles C.; and Toothman, Lawrence R., 3,681,516.

Top Aid Corporation: *See—*
Dozier, Willie L.; and Carter, James M., Jr., 3,681,541.

Topol, George J., to Biospherics Incorporated. Internal precipitation of phosphate from activated sludge. 3,681,235, Cl. 210-6.000.

Toro Manufacturing Corporation: *See—*
Klemenhagen, Dale A., 3,680,293.

Torrance, Brian J. D., to Courtaulds Limited. Polyacrylonitrile fibres. 3,681,004, Cl. 8-17.000.

Townsend, Peter K., to AMP Incorporated. Electrical circuits and methods of fabrication. 3,681,743, Cl. 339-218.00r.

Townsend, Richard Lee, Jr.: *See—*
Larsen, Arthur Bertel; Sosnowski, Thomas Patrick; and Townsend, Richard Lee, Jr., 3,681,519.

Toyoda Koki Kabushiki Kaisha: *See—*
Kanou, Kimio; and Nakamura, Keiichi, 3,681,582.
Okada, Hiroshi, 3,680,876.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kusunoki, Kaneyoshi; Asakura, Tatsumi; Nakakawa, Masahiro; Komatsu, Noboru; and Arai, Tohru, 3,680,626.
Omori, Norio, 3,680,532.
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Toyoto Jidosha Kogyo Kabushiki Kaisha: *See—*
Sumiyoshi, Masaharu; Ito, Osamu; Wakamatsu, Hisato; Kato, Takaaki; and Kawai, Hisasi, 3,680,410.

Traber, Walter; and Weiss, Anton G., to Ciba-Geigy Corporation. Unsymmetrical diphenyl carbonates. 3,681,249, Cl. 252-106.000.

Tracked Hovercraft Limited: *See—*
English, Christopher Durrant, 3,680,489.

Trampier, Charles R., Jr.: *See—*
Griffin, Thomas S.; Rodgers, Warren; and Trampier, Charles R., Jr., 3,681,101.

Transidyne General Corporation: *See—*
Brown, Verne R., 3,681,734.

Transportation Technology, Inc.: *See—*
Donlon, Richard H., 3,680,488.

Trapasso, Louis E.: *See—*
Juelke, Charles V.; and Trapasso, Louis E., 3,681,281.

Trapp, Robert L., to Outboard Marine Corporation. Endless cleated track. 3,680,926, Cl. 305-35.0eb.

Traubel, Harro; and Konig, Klaus, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of microporous sheet structures. 3,681,125, Cl. 117-135.500.

Travis Mills Corporation: *See—*
Bassist, Rudolph G., 3,680,332.

Tregoures, Roger: *See—*
Correard, Daniel; Friess, Emmanuel; Salvi, Antoine; and Tregoures, Roger, 3,681,689.

Trelleborgs Gummifabriks Aktiebolag: *See—*
Hallerback, Stig Lennart, 3,680,799.

Trent, Joseph E.: *See—*

Brown, Robert G.; Sorrells, John R.; and Trent, Joseph E., 3,680,855.
Treschitta, John Philip; and Perusse, Ralph Edmond, to Bunker-Ramo Corporation, The. Electrical switch. 3,681,719, Cl. 335-5.000.
Trimil Corporation: *See—*
Miller, Richard H., 3,680,545.
Trittipoe, Jack H.: *See—*
Olthoff, James A.; Smith, Roger M.; and Trittipoe, Jack H., 3,680,892.
Trivette, Chester D., Jr.: *See—*
Coran, Aubert Y.; Kerwood, Joseph E.; and Trivette, Chester D., Jr., 3,681,356.
Trofimenko, Swiatoslaw, to Du Pont de Nemours, E. I., and Company. Symmetrical and unsymmetrical pyrazaboles. 3,681,381, Cl. 260-310.000.
Tronac, Incorporated: *See—*
Watts, Paul J., 3,680,630.
Troy Steel Corporation: *See—*
Menge, Donald C., 3,680,609.
Truax, Harry: *See—*
Skelton, Robert F.; and Truax, Harry, 3,680,472.
TRW Inc.: *See—*
Ernst, Charles H.; and Cawley, Martin Dean, 3,680,944.
Hein, Frank J.; and Fleck, Donald G., 3,680,625.
Ingerson, Paul G., 3,681,772.
Tselikov, Alexandr Ivanovich; Nosal, Vsevold Vladiminsovich; and Verderevsky, Vadim Anatolievich, to Vsesojuzny Nauchno-Issledovatelsky and Proektnokonstruktorsky Institute Metallurgicheskogo Mashinostroeniya. Floating, blank feed and turning mechanism fo thin wall pipe mill. 3,680,345, Cl. 72-208.000.
Tsuge, Junji: *See—*
Takeya, Kenji; Sekiguchi, Hideto; Tanahashi, Kunio; and Tsuge, Junji, 3,681,275.
Tsuji, Yoshio: *See—*
Mori, Ryoichi; Tajima, Hiroaki; and Tsuji, Yoshio, 3,681,616.
Tsunetomi, Eiichi: *See—*
Hiyama, Yoshio; Fujita, Haruo; Tsunetomi, Eiichi; Okada, Kan; and Kude, Satoshi, 3,681,564.
Tsuzuki, Toshio; and Lieberman, Emanuel R., to Devro, Inc. Process for making edible collagen casings. 3,681,093, Cl. 99-175.000.
Tummes, Hans: *See—*
Falbe, Jurgen; Tummes, Hans; and Weber, Jurgen, 3,681,465.
Tunick, Allen Abraham: *See—*
Pisanchyn, John; Fuhrmann, Robert; Sifniades, Stylianos; and Tunick, Allen Abraham, 3,681,460.
Tunstall, Don M. Sole for walking cast. 3,680,550, Cl. 128-83.500.
Tuominen, Tapio Kalevi: *See—*
Malmstrom, Rolf Einar; and Tuominen, Tapio Kalevi, 3,681,054.
Tupaj, Manfred Paul; and Engert, Heinz, to Sud-Atlas-Werke G.m.b.H. Cassette tape recorder. 3,680,871, Cl. 274-4.00d.
Twin Disc, Incorporated: *See—*
Aschauer, George R.; and Ritenour, Paul E., 3,680,315.
Schneider, Raymond C.; and Mayer, Robert W., 3,680,398.
Twin-Orb, Corporation: *See—*
Shiplov, George J., 3,680,266.
Tyler, W. S., Incorporated: *See—*
Hubach, Louis E., 3,680,697.
Tyszkiewicz, Stefan Eugene. Staplers. 3,680,759, Cl. 227-120.000.
Uchino, Koichi; and Inomata, Hiroshi, to Hitachi, Ltd. Atomic absorption photometer. 3,680,960, Cl. 356-87.000.
Udell, Walter B.: *See—*
McKee, Herbert A.; Kensil, Charles E.; and Udell, Walter B., 3,680,156.
Ueda, Hiroshi: *See—*
Yata, Kintaro; Noda, Koji; and Ueda, Hiroshi, 3,680,955.
Ueki, Kazufusa: *See—*
Takashima, Masaru; Saito, Masao; Matsuyama, Shigeru; and Ueki, Kazufusa, 3,681,051.
Ueki, Kazufusa, to Aikoh Co., Ltd. Agent for desulfurizing molten pig iron. 3,681,050, Cl. 75-58.000.
Ufnalewski, Jacek: *See—*
Monpetit, Louis; Huber, Robert; and Ufnalewski, Jacek, 3,680,782.
Uliczky, Sandor, to Nikex Nehezipari Kulkereskedelmi Vallalat. Closure device for streaming in particular high pressure liquids. 3,680,832, Cl. 251-282.000.
Uljanik brodogradiliste i tvornica Dizel motora Pula u sastavu zdruzenog produzeca 'Jadranbrod': *See—*
Klasic, Mladen, 3,680,513.
Umezawa, Hamao; Maeda, Kenji; and Suhara, Yasuji, to Zaidan Hojin Biseibutsu Kagoku Kenkyu Kai. 5-Acetamide-6-methyltetrahydropyran-2-one and method for its production. 3,681,398, Cl. 260-343.500.
Umezawa, Hamao; Maeda, Kenji; Okami, Yoshiro; and Takeuchi, Tomio. Bleomycin and processes for the preparation thereof. 3,681,491, Cl. 424-115.000.
Unimax Switch Corporation: *See—*
Arthur, Ronald H., 3,681,554.
Union Carbide Corporation: *See—*
Chow, Sui-Wu; Matzner, Markus; and McGrath, James E., 3,681,473.
Kamp, Ewald Albert; and Smith, John C., 3,680,175.
Morison, Charles R. W., 3,681,251.
Shapiro, Stephen I., 3,681,029.
Starcher, Paul Spencer; and Ash, Bertrand Donahay, 3,681,438.
Uniroyal Englebert Deutschland AG: *See—*
Menges, Hans G. L.; Lehnen, Josef P.; and Harms, Englebert G., 3,680,844.
United Aircraft Corporation: *See—*
Blum, Bernard Saul; and Kohn, Marvin Lee, 3,680,197.
Brown, Clyde Owen, 3,681,709.
Lary, Edmund C.; and Meyerand, Russell G., Jr., 3,681,710.
United Kingdom Atomic Energy Authority: *See—*
Bowen, Dennis Herbert; Sambell, Ronald Alfred James; Lambe, Keith Albert Dale; and Mattingley, Neville John, 3,681,187.
Linning, David Lees, 3,680,627.
Long, Geoffrey, 3,681,032.
United McGill Corporation: *See—*
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United States of America
Agriculture: *See—*
Bunk, Albert R.; Bennett, Bailey; Berry, David A.; Halbrook, Noah J.; Schuller, Walter H.; and Lawrence, Ray V., 3,681,268.
Diamond, Martin J.; and Needles, Howard L., 3,681,312.
Diamond, Martin J.; and Needles, Howard L., 3,681,314.
Koch, Peter, 3,680,219.
Princen, Lambertus H., 3,681,099.
Army: *See—*
Bush, Clarence C., 3,680,406.
Freibergs, Elmer, 3,681,715.
Gazza, George E.; and Messier, Donald R., 3,681,011.
Hall, Marvin J., 3,680,482.
Mary, Donald J., 3,681,690.
Messier, Donald R.; and Gazza, George E., 3,681,010.
Otto, Robert J.; Sinclair, Alex H.; Reynolds, Ralph K.; and Neargardner, Robert F., 3,680,924.
Wiese, Harold H., 3,680,242.
Williams, Warren D.; Andrews, Loring B.; and Bader, Frank, 3,681,162.
Army, mesne: *See—*
Barr, Irwin R.; Hayman, Jack H., Jr.; and Wilkening, Harold A., 3,680,240
Dilworth, James B.; and Crow, Thomas G., 3,680,965.
Atomic Energy Commission: *See—*
Holden, Robert B., 3,681,026.
National Aeronautics and Space Administration; Administrator; with respect to an invention of:
Moede, Larry William. Digital control and information system. 3,681,581, Cl. 235-151.100.
Roney, Burton W. Evacuation valve. 3,680,830, Cl. 251-86.000.
Navy: *See—*
Bladh, James C., 3,680,161.
Davis, John S., 3,680,749.
Derderian, George; and Breglia, Denis R., 3,681,608.
Hallanger, Lawrence W., 3,680,216.
Krafft, Joseph M., 3,680,367.
Leinkram, Charles Z., 3,680,196.
Page, Robert M., 3,681,746.
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Arvidson, Carl D., 3,680,310.
Universal Oil Products Company: *See—*
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Bloch, Herman S.; Illingworth, George E.; and Lester, George W., 3,681,442.
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Unkovsky, Boris Vladimirovich: *See—*
Gridunov, Ivan Tikhonovich; Unkovsky, Boris Vladimirovich; Donskaya, Marina Maiorovna; Andreev, Leonid Vladimirovich; Korolkova, Galina Sergeevna; Ignatova, Ljudmila Alexandrovna; and Grigorian, Alexandr Grigorievich, 3,681,278.
Uno, Naoyuki; and Tokutomi, Seijiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera having a preliminary flash illumination for exposure determination. 3,680,457, Cl. 95-42.000.
Uno, Naoyuki; and Tokutomi, Seijiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Photo flash intensity control with variable resistor in flash tube discharge circuit. 3,681,649, Cl. 315-151.000.
Unterstenhofer, Gunter: *See—*
Schmidt, Karl-Julius; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,681,334.
Upjohn Company, The: *See—*
Hester, Jackson B., Jr., 3,681,343.
Magerlein, Barney J., 3,681,321.
Magerlein, Barney J., 3,681,324.
Uraneck, Carl A.; and Burleigh, John E., to Phillips Petroleum Company. Copolymers of cyclic monoolefins and omega-alkenyl-polycycloalkene compounds. 3,681,300, Cl. 260-80.780.
U.S. Divers Co.: *See—*
Morgan, Bevly Boone, 3,680,556.
U.S. Philips Corporation: *See—*
Blatter, Johannes Reinier, 3,681,643.
Donkersloot, Hendrik Cornelis; and van Vucht, Johannes Hendrikus Nicolaas, 3,681,151.
Eibensteiner, Walter, 3,681,539.
Knauff, Karl-Georg, 3,681,018.
U.S. Philips Corporation, mesne: *See—*

Kuiper, Adrianus, 3,681,642.
Teale, Richard William, 3,681,602.

U.S. Plywood-Champion Papers Inc.: *See—*
Carmellini, Andrew E.; and James, Robert E., 3,681,165.
Oetgen, Walter Richard; and Cooley, James, 3,681,274.
Southworth, Ronald W., 3,680,692.

USM Corporation: *See—*
Barker, Joseph; and Hanson, Raymond, 3,680,527.
Meyer, Engelbert A., 3,680,272.

Ustav pro vyzkum motorovych vozidel: *See—*
Kotoc, Stefan, 3,680,317.

Uta, Londra Gheorghe F.: *See—*
Ionescu, Ieodor D.; Uta, Londra Gheorghe F.; and Teodoru, Crizantemelor Aurel D., 3,681,214.

Utah Research & Development Co., Inc.: *See—*
Cannon, Emerson T., 3,680,386.

Vacanti, Francesco: *See—*
Beghelli, Benito; Vacanti, Francesco; and Guerani, Giampaolo, 3,681,280.

Vaiden, I. Clifford, to Barber-Colman Company. Thermocouple protection tube for use in molten metal. 3,680,382, Cl. 73-343.00r.

Val-Jac Manufacturing and Supply Company: *See—*
Clair, Gilbert D., 3,680,583.

Valaguzza, Dino. Suit-case lock cover. 3,680,668, Cl. 190-49.000.

Vale, Peter C.; Palazzola, Anthony; Grui, Nicolae; and Nixon, Raymond F., to Carmet Company. Workpiece loading and unloading method and apparatus. 3,680,267, Cl. 51-215.00h.

Valente, Angelo M.: *See—*
Eddy, John W.; Fitch, Harold G.; Mui, Wing F.; and Valente, Angelo M., 3,681,537.

Valentino, Pete P. Device for tuning stringed instruments. 3,680,427, Cl. 84-456.000.

Valleroy, Gustave J.: *See—*
Rock, William A.; and Valleroy, Gustave J., 3,681,084.

van der Gaag, Cornelis, Netherlands, to N.V. Industrieele Handelscombinatie Holland. Bucket ladder dredger. 3,680,232, Cl. 37-69.000.

Van der Linde, Leendert Maarten; and Boelens, Harmannus, to N. V. Chemische Fabriek 'Naarden'. Process for the preparation of perfume compositions or perfumed articles respectively. 3,681,263, Cl. 252-522.000.

Van Dijk, Cornelis. Tool post holder. 3,680,416, Cl. 82-36.000.

Van Olmen, Johan: *See—*
Mayne, Neil R.; and Van Olmen, Johan, 3,681,267.

Van Paesschen, August Jean: *See—*
Timmerman, Daniel Maurice; Verhille, Karel Eugeen; and Van Paesschen, August Jean, 3,681,070.

Van Slooten, Nico J.: *See—*
Lu, Maoyeh; and Van Slooten, Nico J., 3,680,843.

Van Vessem, Cornelis J.: *See—*
Geerdes, Dirk J.; and Van Vessem, Cornelis J., 3,680,362.

Van Vonderen, Jacobus: *See—*
Amesbury, Maurice G.; and Van Vonderen, Jacobus, 3,680,461.

van Vucht, Johannes Hendrikus Nicolaas: *See—*
Donkersloot, Hendrik Cornelis; and van Vucht, Johannes Hendrikus Nicolaas, 3,681,151.

Vandermey, Robert J., to Industrial Louvers, Inc., mesne. Air cabinet assembly. 3,680,469, Cl. 98-41.00r.

Varian Associates: *See—*
Ernst, Richard R., 3,681,680.
Huber, Ulrich, 3,681,683.

Varispace Industries, Inc.: *See—*
Ryswick, Edward L., 3,680,414.

Vasco Industries Corporation: *See—*
Inklaar, Petrus Adam, 3,681,095.

Veeder Industries Inc.: *See—*
Hoffman, Ernest G., 3,680,402.

Velarde, Esperanza: *See—*
Crabbe, Pierre; and Velarde, Esperanza, 3,681,410.

Velsicol Chemical Corporation: *See—*
Ledford, Nathan Dale, 3,681,446.

Vepa AG: *See—*
Fleissner, Heinz, 3,680,221.

Verderevsky, Vadim Anatolievich: *See—*
Tselikov, Alexandr Ivanovich; Nosal, Vsevold Vladiminsovich; and Verderevsky, Vadim Anatolievich, 3,680,345.

Vereinigte Flugtechnesche Werke-Fokker Gesellschaft mit beschrankter Haftung: *See—*
Pakendorf, Horst, 3,680,316.

Verhille, Karel Eugeen: *See—*
Timmerman, Daniel Maurice; Verhille, Karel Eugeen; and Van Paesschen, August Jean, 3,681,070.

Vesely, Kenneth D., to Universal Oil Products Company. Manufacture of low bulk density-high strength spherical chromia-alumina particles. 3,681,259, Cl. 252-448.000.

Viallet, Claude: *See—*
Lucas, Georges; and Viallet, Claude, 3,681,217.
Lucas, Georges; and Viallet, Claude, 3,681,218.

Vibrac Corporation: *See—*
Hendershot, James R.; and Searle, Robert F., 3,680,671.

Vibratechniques S.A.: *See—*
Sironi, Virginio, 3,680,842.

Victaulic Company of America: *See—*
Young, John S., 3,680,894.

Victor Company of Japan, Limited: *See—*
Genma, Susumu; Kuroda, Akio; Kato, Toshio; and Kishi, Fusao, 3,681,225.

Victor Company of Japan, Ltd.: *See—*
Hidaka, Tsuneyoshi; Morita, Akiyoshi; Honjo, Yoshihiko; and Nishimura, Takashi, 3,681,518.
Wada, Yoshiyo; Kinjo, Hisao; Takashima, Seiichi; and Akuwa, Fumio, 3,681,525.

Viessmann, Hans. Rotary valve dispenser for tablets. 3,680,736, Cl. 221-14.000.

Vik, Albam M., to Dempco, Inc. Unique hydraulic coupler. 3,680,591, Cl. 137-614.050.

Virginia Chemical Inc.: *See—*
Zeek, Elwood R., 3,680,707.

Vita Mayer & C. Gia F. LLI Vita S.A.S.: *See—*
Nahum, Lucio Sion, 3,681,318.

Viterbo, Rene: *See—*
Mastursi, Michele; Lembo, Sabino; and Viterbo, Rene, 3,681,354.

Vitrone, John: *See—*
Litt, Morton H.; Lund, Richard B.; Vitrone, John; and Herz, Jack L., 3,681,329.
Litt, Morton H.; Lund, Richard B.; Vitrone, John; Herz, Jack L.; and O'Donnell, Francis C., 3,681,333.

Vits, Hilmar, to Maschinenbau Vita GmbH. Apparatus for a non-contacting directional control of a web. 3,680,223, Cl. 34-156.000.

Vitt, Stanley P.: *See—*
Herbert, John T.; Sullivan, Paul E.; and Vitt, Stanley P., 3,680,895.

Vockroth, William Joseph: *See—*
Werner, Walter Myers; Vockroth, William Joseph; and Hays, Kenneth Scott, 3,681,512.

Vogel, Harold E. Brick elevator. 3,680,680, Cl. 198-132.000.

Vogel, Herward A.: *See—*
Loudas, Basil L.; and Vogel, Herward A., 3,681,292.

Vogel, Siegfried F., to International Business Machines Corporation. Sputtering process for making ferroelectric films. 3,681,226, Cl. 204-192.000.

Vogel, Walter H.: *See—*
James, Robert C.; Vogel, Walter H.; and Sorenson, Richard D., 3,680,446.

Vogl, Willibald; Kinzler, Johann; and Goessl, Gottfried, to Siemens Aktiengesellschaft. Device for eliminating interference between conductors of high frequency signals. 3,681,612, Cl. 307-105.000.

Voigt, Gottfried, to Braun A.G. Spherical, layer-shaped self-adjusting bearing for shafts. 3,680,931, Cl. 308-72.000.

Volkswagenwerk Aktiengesellschaft: *See—*
Dohring, Ekkehard; and Kirschner, Peter, 3,680,408.

Von Berckheim, Constantin Graf: *See—*
Jahnke, Herbert; and Von Berckheim, Constantin Graf, 3,680,281.

Von Bose, Robert J., to LTV Aerospace Corporation. Survey apparatus. 3,680,958, Cl. 356-141.000.

Von Castelmur, Hans, to Solco Basel, AG. 2-Phenylpyrazolinones and process therefor. 3,681,383, Cl. 260-310.00a.

von der Eltz, Hans-Ulrich; and Kollodzeiski, Norbert, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Dyeing wool in fibrous material containing wool with 1:2 metal complex azo dyes, acid and aromatic hydrocarbons, carboxylic acid/esters or phenols. 3,681,005, Cl. 8-43.000.

Von Rintelen, Harald: *See—*
Ranz, Erwin; Von Rintelen, Harald; Neumann, Wolfram; and Muller, Gerhard, 3,681,075.

Vonbank, Heinrich: *See—*
Tarmann, Bruno; and Vonbank, Heinrich, 3,680,623.

Vos, Kenneth Dean; and Gloyd, Harry, to Johnson, S. C., & Son, Inc. Pressurized package. 3,680,738, Cl. 222-54.000.

Vsesojuzny Nauchno-Issledovatelsky: *See—*
Tselikov, Alexandr Ivanovich; Nosal, Vsevold Vladiminsovich; and Verderevsky, Vadim Anatolievich, 3,680,345.

Vysshee Tekhnicheskoe Uchilische Im. N.E.: *See—*
Nikitin, Jury Filippovich; Romanenko, Nikolai Trofimovich; and Romanenko, Mikhail Trofimovich, 3,680,306.

W&T Avery Limited: *See—*
Caulkin, William Ernest, 3,681,574.

Wachter, Robert A., to General Electric Company. Fixture for use in the foam insulation of regrigerator cabinets. 3,680,825, Cl. 249-83.000.

Wada, Yoshiyo; Kinjo, Hisao; Takashima, Seiichi; and Akuwa, Fumio, to Victor Company of Japan, Ltd. Digital rotation motor. 3,681,525, Cl. 178-6.6dd.

Wagenknecht, Rudolf; Gotta, Hans; Spei, Brigitte; and Gottwald, Karl-Heinz, to Collardin, Gerhard, GmbH. Process for the application of thin, continuous phosphate layers on metal surfaces. 3,681,148, Cl. 148-6.15z.

Wagner Electric Corporation: *See—*
Falk, Edward J., 3,680,921.
Quinn, Halsey P., 3,681,654.

Wagner, Josef. Spray gun. 3,680,789, Cl. 239-332.000.

Wagner, Josef. Pump and method of driving same. 3,680,981, Cl. 417-388.000.

Wagner, Paul H.: *See—*
Irvin, Howard B.; and Wagner, Paul H., 3,681,308.

Wahls, Robert A.: *See—*
Freedman, Paul; Freedman, Gerald; Wahls, Robert A.; and Hornstein, Harvy R., 3,680,915.

Wakamatsu, Hisato: *See—*
Sumiyoshi, Masaharu; Ito, Osamu; Wakamatsu, Hisato; Kato, Takaaki; and Kawai, Hisasi, 3,680,410.
Waldes Kohinoor, Inc.: *See—*
Wurzel, Hugo, 3,680,935.
Walker Crosweller & Company Limited: *See—*
Abron, Dennis C., 3,680,780.
Walker, Donald E., to Barber-Greene Company. Idler roll structure with improved bearing seal assembly. 3,680,933, Cl. 308-187.100.
Walker, Grant W.; and Ford, Duane B., to Rich, John Enterprises, Inc. Liquid shock absorbing buffer. 3,680,662, Cl. 188-1.00b.
Walker, Joseph J.: *See—*
Bell, Oran M.; and Walker, Joseph J., 3,680,551.
Bell, Oran M.; and Walker, Joseph J., 3,680,552.
Wallace, Baird; and Smith, Philip E., Jr., to Olin Corporation. Target shooting apparatus. 3,680,863, Cl. 273-101.000.
Wallace, Frank Blakeslee, Jr., to Garrett Corporation, The. Two-spool auxiliary power unit and control means. 3,680,309, Cl. 60-39.070.
Wallace, R. Eugene: *See—*
Zagotta, Joseph L.; Wallace, R. Eugene; and Burlington, Donald A., 3,680,737.
Wallace Supplies Manufacturing Company: *See—*
Dewitt, Edward J., 3,680,264.
Wallace, William R. J., to Hygrade Foods Inc. Conveyor mechanism for sausage-like products. 3,680,757, Cl. 226-105.000.
Walsh, George M., to Raytheon Company. Sea bottom slope measuring apparatus. 3,681,747, Cl. 340-3.00r.
Walterick, Kenneth H.: *See—*
Genovese, John M.; and Walterick, Kenneth H., 3,681,593.
Wamser, Christian A.: *See—*
Selman, Murray; Wamser, Christian A.; and Wilkalis, John E., 3,681,035.
Wandel u. Goltermann: *See—*
Harzer, Peter, 3,681,706.
Wanesky, William R., to Western Electric Company, Incorporated. Microscope apparatus with movable fluid bearing object support. 3,680,947, Cl. 350-81.000.
Wann, Robert Earl, to Procter & Gamble Company, The. Lubricant composition. 3,681,247, Cl. 252-51.50a.
Wanskuck Company: *See—*
Blackmer, Dwight W.; and Bernier, Robert N., 3,680,809.
Ward, Maurice M. Grinding machines. 3,680,261, Cl. 51-95.0lh.
Ware, Peter G., to Dunlop Holdings Limited. Burners. 3,681,000, Cl. 431-247.000.
Warncke, Ernst, to Dragerwerk Aktiengesellschaft. Protective mask with annular flushing chamber. 3,680,555, Cl. 128-141.00r.
Warren, Barney, to Cellu-Craft, Inc. Plastic bag with integral pouch and method for making same. 3,680,768, Cl. 229-56.000.
Warsaw, Arthur J. System for measuring tractive power with controlled application of load. 3,680,368, Cl. 73-117.000.
Watanabe, Hideo: *See—*
Leonard, John E.; and Watanabe, Hideo, 3,681,136.
Watson, David D.: *See—*
Brown, Lloyd H.; and Watson, David D., 3,681,286.
Watson, Fred A., to Soltronics, Inc., mesne. Vehicular remote power supply system. 3,681,611, Cl. 307-10.00r.
Watson, William H.: *See—*
Young, Chauncey; and Watson, William H., 3,680,764.
Watts, Leonard, to Technicon Instruments Corporation. Method of continuously casting tube. 3,680,624, Cl. 164-85.000.
Watts, Paul J., to Tronac, Incorporated. Temperature control system with heater-cooler. 3,680,630, Cl. 165-30.000.
Waybright, George Cleveland, to GTE Sylvania Incorporated. Vertical sweep multivibrator having false trigger protection. 3,681,712, Cl. 331-145.000.
Weage, Kenneth A., to Evans Products Company. Gondola bulkhead. 3,680,492, Cl. 105-376.000.
Webb, Oswald, to Ferguson, Harry Research Limited. Clutches. 3,680,673, Cl. 192-41.000.
Weber, Jurgen: *See—*
Bergerhoff, Gunter; Tihanyi, Bela; Falbe, Jurgen; and Weber, Jurgen, 3,681,435.
Bergerhoff, Gunter; Tihanyi, Bela; Falbe, Jurgen; Weber, Jurgen; and Weisheit, Werner, 3,681,477.
Falbe, Jurgen; Tummes, Hans; and Weber, Jurgen, 3,681,465.
Wehner, John Francis, to Du Pont de Nemours, E. I., and Company. EPDM Polymerization process. 3,681,306, Cl. 260-80.780.
Weigele, Manfred: *See—*
Leimgruber, Willy; and Weigele, Manfred, 3,681,331.
Weinstein, Seymour. Filter cleaning system. 3,680,702, Cl. 210-81.000.
Weinstock, Irwin B., to General Electric Company. Charger for rechargeable cell. 3,681,673, Cl. 320-9.000.
Weiser, Harald: *See—*
Schwieter, Ulrich; Thommen, Hans; and Weiser, Harald, 3,681,082.
Weisglass, Louis L.: *See—*
Flieder, Robert A.; and Weisglass, Louis L., 3,681,613.
Weisheit, Werner: *See—*
Bergerhoff, Gunter; Tihanyi, Bela; Falbe, Jurgen; Weber, Jurgen; and Weisheit, Werner, 3,681,477.
Weiss, Anton G.: *See—*
Traber, Walter; and Weiss, Anton G., 3,681,249.
Weiss, Eugene M.: *See—*
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Weiss, Irwin K.: *See—*
Keppel, Charles M.; and Weiss, Irwin K., 3,680,883.
Welding & Steel Fabrication Co., Inc.: *See—*
Piegza, Henry J., 3,680,569.
Wellan, Wayne G.; Converse, John O.; and Swanson, Arden E., to Hart-Carter Company. Modular bag-type filter for gases. 3,680,285, Cl. 55-302.000.
Wellings, Ian, to Du Pont de Nemours, E.I., and Company. Certain 5,6,7,8-tetrahydro-5,8-ethano-pyridino [2,3-b]-thieno[5,4-d] pyrimidines. 3,681,351, Cl. 260-256.50r.
Wells, Jan R., to Wells, W. F., and Sons, Inc. Sensor for determining band saw blade deflection. 3,680,417, Cl. 83-74.000.
Wells, W. F., and Sons, Inc.: *See—*
Wells, Jan R., 3,680,417.
Welzel, Fred H.: *See—*
Daily, William C.; and Welzel, Fred H., 3,680,854.
Werkzeugmaschinenfabrik Derlikon-Buhrle AG: *See—*
Muhleman, Ernst, 3,680,434.
Werner, Walter Myers; Vockroth, William Joseph; and Hays, Kenneth Scott, to AMP Inc. Electrical connector. 3,681,512, Cl. 174-84.00r.
Wessel, Paul D.; and Nelson, Max A., to International, Inc. Time delay switch. 3,681,721, Cl. 335-61.000.
Wessling, Ritchie A.: *See—*
Settineri, William J.; and Wessling, Ritchie A., 3,681,419.
Western Electric Company, Incorporated: *See—*
Brown, Martin J., 3,681,103.
Goll, Frederick Martin, 3,681,723.
Jannett, Frederick Joseph; and Mracek, Jaroslav, 3,681,139.
Wanesky, William R., 3,680,947.
Westinghouse Canada Limited-Westinghouse Canada Limitee: *See—*
McGregor, Gavin, 3,680,201.
Westinghouse Electric Corporation: *See—*
Calfee, Wendell, 3,681,636.
Cellerini, Albert T.; Majcher, John; and Paton, Charles R., 3,681,545.
De Corso, Serafino M., 3,680,163.
Kiscaden, Roy W.; and Yannone, Robert A., 3,680,572.
Martin, Jack, 3,681,640.
McCoy, Robert A., 3,680,829.
Mercer, Robert, 3,680,978.
Mitchell, George F., Jr.; Morris, Robert D.; and Nevinsky, Michael, 3,681,728.
Moroney, John E., 3,681,697.
Nathanson, Harvey C.; and Davis, John R., Jr., 3,681,134.
Olds, Richard G.; and Zammitt, Frank X., 3,681,665.
Raimondi, Albert A., 3,680,932.
Young, Robert R.; and English, William A., 3,680,984.
Westlake, Edward B., Jr. Plastic pallet. 3,680,496, Cl. 108-58.000.
Weygant, Robert Miller: *See—*
Lehmann, Karl Friedrich; and Weygant, Robert Miller, 3,680,679.
Whalen, George J.; and Graf, Rudolf F. Electronic fuel level warning device. 3,681,753, Cl. 340-59.000.
Wharram, Sidney A. Spark plug wrench. 3,680,159, Cl. 7-1.00e.
Whirlpool Corporation: *See—*
Elders, Alvin J., 3,681,729.
White, Raymond F.; and Demain, Arnold L., to Merck & Co., Inc. Fermentation processes for preparing (-) (cis-1,2 epoxypropyl) phosphonic acid. 3,681,198, Cl. 195-80.000.
Wick, Helmut: *See—*
Zeile, Karl; Schulz, Werner; Banholzer, Rolf; and Wick, Helmut, 3,681,500.
Widiger, Aimar T.: *See—*
Titchenal, Oliver R.; Widiger, Aimar T.; and Yurcisin, Robert A., 3,681,092.
Wiechert, Rudolf: *See—*
Laurent, Henry; Kolb, Karl H.; and Wiechert, Rudolf, 3,681,405.
Wieland, Egon: *See—*
Naumann, Willy R.; Albrecht, Wilhelm; and Wieland, Egon, 3,680,405.
Wieland-Werke Aktiengesellschaft: *See—*
Gotschel, Hans; and Settele, Helmut, 3,680,620.
Wiese, Harold H., to United States of America, Army. Rammer and extractor assembly for telescopic rounds. 3,680,242, Cl. 42-25.000.
Wieske, Reinhold, to Schering Aktiengesellschaft. Process for the preparation of 5-bromo-6-fluoro-steroids. 3,681,404, Cl. 260-397.400.
Wilcox, Richard L.: *See—*
Tate, Roger W.; and Wilcox, Richard L., 3,680,793.
Wilcox, Rudolph R. Crimping tool. 3,680,346, Cl. 72-211.000.
Wilding, Malcolm D., to Courtaulds Limited. Coating glass filaments. 3,681,120, Cl. 117-119.200.
Wilfore, John F., to General Electric Company. Process for the preparation of liquid calibration fluids. 3,681,255, Cl. 252-408.000.
Wilkalis, John E.: *See—*
Selman, Murray; Wamser, Christian A.; and Wilkalis, John E., 3,681,035.
Wilke, Werner G.: *See—*
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Wilkening, Harold A.: *See—*
Barr, Irwin R.; Hayman, Jack H., Jr.; and Wilkening, Harold A., 3,680,240.

Wilkinson, Olie E. Fishhook extractor. 3,680,248, Cl. 43-53.500.
Willems, Jozef Frans: *See—*
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Willersinn, Herbert: *See—*
Naarmann, Herbert; and Willersinn, Herbert, 3,681,285.
Williams, Thomas: *See—*
Belmonte, James A.; and Williams, Thomas, 3,680,207.
Williams, Warren D.; Andrews, Loring B.; and Bader, Frank, to United States of America, Army. Antenna fabrication method. 3,681,162, Cl. 156-289.000.
Williamson, James Norris: *See—*
Heit, Allyn Harold; and Williamson, James Norris, 3,681,213.
Willis, David Owen: *See—*
Boardman, Wilfred A.; and Willis, David Owen, 3,680,151.
Wilputte Corporation, mesne: *See—*
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Wilsher, Rudolph S: *See—*
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Wilson, Alfred L.: *See—*
Ossenkop, Robert J.; and Wilson, Alfred L., 3,680,858.
Wilson, David E.: *See—*
Thompson, Gene C.; Radomski, Joseph E.; and Wilson, David E., 3,680,220.
Wilson, Eric J.; and Briggs, Alan Henry, to British Steel Corporation. Resilient railway bogie side bearings. 3,680,490, Cl. 105-199.0cb.
Wilson, Glenn C. Carrying handles. 3,680,752, Cl. 224-56.000.
Wilson, Richard A.: *See—*
Katz, Ira; Wilson, Richard A.; and Giacino, Christopher, 3,681,088.
Wind, Robert H.: *See—*
Peterson, Philip R.; Wind, Robert H.; and Mark, Douglas E., 3,680,923.
Windal, Georges: *See—*
Giorgi, Jean Claude; and Windal, Georges, 3,680,621.
Windmoller & Holscher: *See—*
Muller, Reiner; and Achelpohl, Fritz, 3,680,770.
Wing, Milton S.: *See—*
Fraini, Edward A.; and Wing, Milton S., 3,681,234.
Winn, Martin, to Abbott Laboratories. Pyrazolo naphthridines. 3,681,368, Cl. 260-295.000.
Winquist, Knut Ludvig: *See—*
Danielsson, Gunnar; and Winquist, Knut Ludvig, 3,680,503.
Winslow, Samuel J. Hollowware construction. 3,680,733, Cl. 220-73.000.
Winton, Orrin J.: *See—*
Marcio, Roger A.; and Winton, Orrin J., 3,680,371.
Winzen, John P. Filter device and transparent cover. 3,681,562, Cl. 210-94.000.
Wiquel, Valentino, to Compagnie de Saint-Gobain. Apparatus for the continuous manufacture of wicks, threads and screens from thermoplastic materials. 3,681,169, Cl. 156-371.000.
Wirks, Wilhelm: *See—*
Moser, Wilhelm; Ariendorf, B. Honningen; Wirks, Wilhelm; and Ackermann, Karl-Heinz, 3,680,798.
Wisdom, William H.: *See—*
Thompson, John A.; and Wisdom, William H., 3,681,006.
Wismer, Marco; and Prucnal, Paul J., to PPG Industries, Inc. Novel polymerization process. 3,681,307, Cl. 260-80.700.
Witco Chemical Corporation: *See—*
Benson, Albert; and Mausner, Marvin, 3,681,443.
Witten-Annen, Hans Lewer; Dust, Hanspeter; and Thonnes, Martin, to Chemische Fabrik Kalk GmbH. Medium for consolidating dust in coal-mines. 3,681,246, Cl. 252-88.000.
Wittes, James M.; and Bonanno, Peter J., to Becton, Dickinson and Company. Surgical drainage apparatus for bladder. 3,680,562, Cl. 128-347.000.
Wolf, Gerhard, to Siemens Aktiengesellschaft. Carry transfer circuit for a parallel binary adder. 3,681,584, Cl. 235-175.000.
Wolfe, Earnest C. Tape position marking and sensing device. 3,681,575, Cl. 235-92.0pe.
Wolk, Ronald H.: *See—*
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Zeile, Karl; Schulz, Werner; Banholzer, Rolf; and Wick, Helmut, to Boehringer Ingelheim GmbH. Spray compositions for treatment of obstructive disorders of the respiratory tract and methods therefor. 3,681,500, Cl. 424-265.000.
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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Celak, Richard G., and V. Ricci, to E. I. du Pont de Nemours and Co. Thermoformed packages. T901,002, 8–1–72, Cl. 206—46.

Continental Oil Company: *See*—
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Dairyland Food Laboratories, Inc.: *See*—
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Gibson, Joseph Whitton, Jr. Fabric knitted of different color yarns. T901,013, 8–1–72, Cl. 66–169.

Govindan, Tirunillayi S., to E. I. du Pont de Nemours and Co. Process for making smooth vapor-permeable microporous sheet. T901,007, 8–1–72, Cl. 117—63.

Henry, James W., and C. C. Dannelly. Carpet construction having high resistance to propagation of flaming on contact with incandescent or burning bodies. T901,003, 8–1–72, Cl. 161—66.

Hritz, George G., D. J. Royer and W. C. Ziegenhain, to Continental Oil Co. Water dispersible alpha-alumina monohydrate. T901,010, 8–1–72, Cl. 23—143.

Hutchins, Richard D.: *See*—
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Le Fevre, Cecil W., V. Regentik, V. W. Woestemeyer, and W. G. Woods, to United States Borax & Chemical Corp. Herbicidal combination. T901,009, 8–1–72, Cl. 71—121.

Mumpower, Robert C. II. Method and apparatus for forming a diagonal flow filter from cylindrical tobacco smoke filter rods. T901,014, 8–1–72, Cl. 264—109.

Nelson, John H., to Dairyland Food Laboratories, Inc. Concentration of animal-derived milk clotting enzymes by reverse osmosis. T901,012, 8–1–72, Cl. 195—66.

Ojakaar, Leo, to E. I. du Pont de Nemours and Co. Preparation of dialkyl xanthogen disulfides. T901,006, 8–1–72, Cl. 260—455.

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Reithel, Raymond F. Electron beam recording photographic material. T901,008, 8–1–72, Cl. 96—67.

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Seus, Edward J. Photosensitive elements for color diffusion transfer systems having reduced pressure sensitivity. T901,015, 8–1–72, Cl. 96—77.

Schmid, Ernest, to Edouard Dubied & Cie Societe Anonyme. Device for positioning a cutting edge of a cutting tool on a machine tool. T901,004, 8–1–72, Cl. 82—14.

Shelley, Bernard F., and W. D. Walker. Apparatus for winding yarn. T901,005, 8–1–72, Cl. 242—18.

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Virkhaus, Rein. Photoconductive compositions and elements. T901,016, 8–1–72, Cl. 96—1.

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Woestemeyer, Vernon W.: *See*—
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Ziegenhain, William C.: *See*—
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LIST OF REISSUE PATENTEES

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Schutte, R. W., McConnell, and Britt. Re 27,453.

Chirota, William W., C. G. Rigge, and T. Shewchuck, to Ford Motor Co. Single plane electric reversing switch for motor operation control. Re 27,448, 8–1–72, Cl. 200—1.

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67R 3,680,516
72 3,680,518
103 3,680,519
162 3,680,511
235B 3,680,520
CLASS 115
1R 3,680,521
23 3,680,522
CLASS 116
34R 3,680,523
132 3,680,524
135 3,680,525
174 3,680,526
CLASS 117
8.5 3,681,103
15 3,681,105
17.5 3,681,106
3,681,107
33 3,681,108
33.3 3,681,109
33.5CM 3,681,110
3,681,111
35.5 3,681,112
47A 3,681,114
64C 3,681,116
64R 3,681,115
75 3,681,117
76T 3,681,104
102L 3,681,119
102M 3,681,118
119.2 3,681,120
119.4 3,681,121
121.2 3,681,123
124F 3,681,122
135.5 3,681,125
136 3,681,124
3,681,126
137 3,681,060
138.8D 3,681,129
138.8F 3,681,127
141 3,681,128
143A 3,681,130
3,681,131
201 3,681,132
3,681,133
212 3,681,134
3,681,135
230 3,681,136
235 3,681,137
238 3,681,138
461FA 3,681,113
CLASS 118
7 3,680,527
8 3,680,529
50 3,680,528
CLASS 119
28 3,680,530
CLASS 122
379 3,680,531
CLASS 123
32EA 3,680,532
117R 3,680,533
119A 3,680,534
119R 3,680,535
139BG 3,680,536
140MC 3,680,537
169PB 3,680,538
198DB 3,680,539
CLASS 124
11 3,680,540
CLASS 126
85B 3,680,541
CLASS 128
1R 3,680,542
2F 3,680,543
2N 3,680,545
2R 3,680,544
18 3,680,546
66 3,680,547
69 3,680,548
80E 3,680,549
83.5 3,680,550
84C 3,680,552
84R 3,680,551
92BC 3,680,553
134 3,680,554
141R 3,680,555
142.2 3,680,556
185 3,680,557
218M 3,680,558
220 3,680,559
276 3,680,560
296 3,680,561
347 3,680,562
402 3,680,563
CLASS 132
9 3,680,564
3,680,565
CLASS 133
3 3,680,566
CLASS 134
2 3,681,140
41 3,681,141
42 3,681,142
57D 3,680,567
63 3,680,568
64 3,680,569
134 3,680,570
CLASS 135
22 3,680,571
CLASS 136
83R 3,681,143
3,681,144
86R 3,681,145
120FC 3,681,146
CLASS 137
49 3,680,572
81.5 3,680,573
3,680,574
3,680,575
3,680,576
3,680,578
3,680,579
86 3,680,580
101 3,680,581
102 3,680,582
106 3,680,583
493 3,680,585
501 3,680,586
514.3 3,680,587
596.18 3,680,588
608 3,680,589
3,680,590
614.05 3,680,591
625.4 3,680,592
625.48 3,680,593
3,680,595
625.6 3,680,577
625.69 3,680,594
3,680,596
630.19 3,680,597
CLASS 138
143 3,680,584
CLASS 139
1 3,680,598
3,680,599
68 3,680,601
76 3,680,602
122R 3,680,600
180 3,680,603
CLASS 140
92.1 3,680,604
CLASS 141
1 Re.27,449
128 3,680,606
CLASS 143
32F 3,680,607
32 3,680,608
46E 3,680,609
133J 3,680,610
CLASS 144
162 3,680,611
178 3,680,612
209R 3,680,613
288 3,680,617
CLASS 146
3M 3,680,614
42 3,680,615
55 3,680,618
222 3,680,616
CLASS 148
1.5 3,681,147
6.15Z 3,681,148
6.27 3,681,149
29 3,681,150
105 3,681,151
113 3,681,152
187 3,681,153
3,681,154
188 3,681,155
CLASS 149
22 3,681,156
CLASS 151
36 3,680,619
41.75 3,680,620
CLASS 156
62.2 3,681,157
70 3,681,158
209 3,681,159
212 3,681,160
285 3,681,161
289 3,681,162
291 3,681,163
294 3,681,164
297 3,681,165
308 3,681,166
311 3,681,167
332 3,681,168
344 3,681,139
371 3,681,169
380 3,681,170
382 3,681,171
506 3,681,172
555 3,681,173
559 3,681,174
576 3,681,175
580 3,681,176
583 3,681,177
584 3,681,178
CLASS 159
44 3,680,621
CLASS 160
25 3,680,622
CLASS 161
4 3,681,179
5 3,681,180
41 3,681,181
109 3,681,182
3,681,183
3,681,184
143 3,681,185
166 3,681,186
170 3,681,187
173 3,681,188
175 3,681,189
CLASS 162
52 3,681,191
117 Re.27,453
246 3,681,192
304 3,681,193
CLASS 164
76 3,680,623
85 3,680,624
127 3,680,625
138 3,680,626
362 3,680,628
CLASS 165
26 3,680,629
30 3,680,630
162 3,680,627
CLASS 166
57 3,680,631
89 3,680,632
252 Re.27,456
256 3,680,633
261 3,680,634
300 3,680,635
302 3,680,636
313 3,680,637
CLASS 171
76 3,680,638
CLASS 172
15 3,680,639
159 3,680,648
258 3,680,640
371 3,680,641
CLASS 173
13 3,680,642
133 3,680,643
139 3,680,644
CLASS 174
16B 3,681,509
23R 3,681,510
36 3,681,511
52S 3,681,513
84R 3,681,512
107 3,681,515
108 3,681,514
138E 3,681,516
138R 3,681,517
CLASS 175
16 3,680,645
323 3,680,646
325 3,680,647
CLASS 176
19 3,681,194
CLASS 177
99 3,680,649
210 3,680,650
CLASS 178
5.2R 3,681,518
5.4ST 3,681,519
5.4E 3,681,521
5.4R 3,681,520
6.6DD 3,681,525
6.6TC 3,681,522
6.6A 3,681,523
3,681,524
3,681,526
3,681,527
6.8 3,681,528
70R 3,681,529
CLASS 179
1SA 3,681,530
1J 3,681,531
6.3R 3,681,532
15AS 3,681,533
18DA 3,681,536
18ET 3,681,534
18GE 3,681,537
81A 3,681,538
90B 3,681,535
100.11 3,681,541
100.2Z 3,681,539
156 3,681,540
CLASS 180
9.4 3,680,651
22 3,680,652
23 3,680,653
48R 3,680,654
54R 3,680,655
114 3,680,656
121 3,680,657
CLASS 181
31B 3,680,658
36A 3,680,659
48 3,680,660
CLASS 184
55A 3,680,661
CLASS 188
1B 3,680,662
24 3,680,663
79.5GT 3,680,664
134 3,680,665
170 3,680,666
198 3,680,667
CLASS 190
49 3,680,668
CLASS 191
50 3,681,542
CLASS 192
8R 3,680,672
18R 3,680,669
3,680,670
21.5 3,680,671
41 3,680,673
105BA 3,680,674
107R 3,680,675
232 3,680,686
CLASS 193
42 3,680,676
CLASS 195
4 3,681,195
36R 3,681,196
63 3,681,197
80 3,681,198
98 3,681,199
142 3,681,200
CLASS 198
20 3,680,677
34 3,680,678
104 3,680,679
132 3,680,680
187 3,680,681
204 3,680,682
220BC 3,680,683
230 3,680,684
232 3,680,685
CLASS 200
1V Re.27,448
19R 3,681,543
44 3,681,544
50AA 3,681,545
68 3,681,547
81R 3,681,546
144R 3,681,548
148E 3,681,549
155 3,681,550
161 3,681,551
168C 3,681,552
168G 3,681,553
172A 3,681,554
3,681,556
172R 3,681,555
CLASS 202
241 3,681,201
CLASS 203
53 3,681,202
3,681,203
77 3,681,204
CLASS 204
1T 3,681,205
3,681,206
3,681,207
30 3,681,209
3,681,225
35R 3,681,210
43 3,681,211
51 3,681,212
82 3,681,213
96 3,681,214
159.14 3,681,216
159.23 3,681,215
162XN 3,681,217
3,681,218
162 3,681,219
164 3,681,220
181 3,681,221
3,681,222
3,681,223
3,681,224
192 3,681,226
3,681,227
195R 3,681,228
243R 3,681,229
CLASS 206
45.14 3,680,687
46H 3,680,688
47A 3,680,689
59C 3,681,190
65R 3,680,690
3,680,691
CLASS 207
11 3,681,208
CLASS 208
33 3,681,230
59 3,681,231
80 3,681,232
90 3,681,233
141 3,681,234
CLASS 209
74M 3,680,692
75 3,680,693
119 3,680,694
139A 3,680,695
240 3,680,696
3,680,697
CLASS 210
6 3,681,235
16 3,681,236
30 3,681,237
46 3,680,698
47 3,681,283
50 3,681,238
75 3,680,699
3,680,700
80 3,680,701
81 3,680,702
94 3,681,562
136 3,680,703
218 3,680,704
222 3,680,705
238 3,680,706
266 3,680,707
402 3,681,239
404 3,680,708
494 3,680,709
CLASS 211
24 3,680,710
105.3 3,680,711
181 3,680,712
CLASS 212
35HC 3,680,713
145 3,680,714
CLASS 214
1QE 3,680,715
1H 3,680,716
6B 3,680,717
16.1CE 3,680,718
17D 3,680,719
38R 3,680,720
75R 3,680,721
138R 3,680,722
3,680,723
138 3,680,724
305 3,680,725
CLASS 215
12R 3,680,726
CLASS 219
10.55 3,681,557
10.61 3,681,558
10.79 3,681,559
61 3,681,560
80 3,681,561
97 3,681,563
125R 3,681,564
126 3,681,565
326 3,681,566
365 3,681,567
432 3,681,568
492 3,681,569
CLASS 220
3 3,680,727
4R 3,680,728
22 3,680,729
46R 3,680,730
55AN 3,680,731
57 3,680,732
73 3,680,733
83 3,680,734
97R 3,680,735
CLASS 221
14 3,680,736
211 3,680,737
CLASS 222
54 3,680,738
70 3,680,739
129 3,680,740
177 3,680,741
3,680,742
397 3,680,743
437 3,680,744
570 3,680,745
CLASS 223
88 3,680,746
91 3,680,747
98 3,680,748
CLASS 224
5G 3,680,750
28B 3,680,751
56 3,680,752
CLASS 226
25 3,680,753
76 3,680,754
92 3,680,755
97 3,680,756
105 3,680,757
183 3,680,758
CLASS 227
120 3,680,759
CLASS 228
2 3,680,760
3 3,680,761
37 3,680,762
CLASS 229
1.5B 3,680,763
17R 3,680,764
40 3,680,765
51TC 3,680,766
3,680,767
56 3,680,768
58 3,680,769
62.5 3,680,770
65 3,680,771
79 3,680,772
CLASS 232
17 3,680,773
CLASS 234
100 3,680,774
CLASS 235
61.7R 3,681,570
3,681,571
71A 3,680,775
88 3,681,572
3,681,573
92PE 3,681,575
92SH 3,681,574
133R 3,681,576
150.2 3,681,583
150.22 3,681,580
151.1 3,681,581
151.3 3,681,577
151.32 3,681,582
153 3,681,578
175 3,681,584
181 3,681,579
184 3,681,585
195 3,681,586
CLASS 236
49 3,680,776
CLASS 238
10E 3,680,777
CLASS 239
3 3,680,779
26 3,680,780
96 3,680,782
100 3,680,778
101 3,680,783
126 3,680,784

132.3 3,680,785
146 3,680,786
177 3,680,787
265.23 3,680,788
332 3,680,789
353 3,680,790
428.5 3,680,791
431 3,680,781
452 3,680,792
468 3,680,793
585 3,680,794
587 3,680,795

CLASS 240

2.1 3,681,587
10B 3,681,588
10.1 3,681,589
10.5 3,681,590
41.3R 3,681,591
47 3,681,592
51.11R 3,681,593
51.11 3,681,594
147 3,681,596

CLASS 241

21 3,680,796
46B 3,680,829
73 3,680,797
93 3,680,798
183 3,680,799

CLASS 242

43 3,680,800
43.1 3,680,801
54A 3,680,802
55.01 3,680,803
67.3 3,680,804
67.4 3,680,805
68 3,680,806
94 3,680,807
107.4 3,680,808
118.6 3,680,809
171 3,680,810
189 3,680,811
199 3,680,812
205 3,680,813

CLASS 244

3.14 3,680,749
13 3,680,814
46 3,680,815
3,680,816
103R Re.27,450

CLASS 246

63C 3,681,597

CLASS 248

68 3,680,817
73 3,680,818
216 3,680,819
314 3,680,820
371 3,680,821
475 3,680,822

CLASS 249

3 3,680,823
13 3,680,824
83 3,680,825
91 3,680,826
134 3,680,828
202 3,680,827

CLASS 250

41.9ME 3,681,599
41.9S 3,681,598
49.5A 3,681,600
83C 3,681,595
83.3R 3,681,601
3,681,602
83.6FT 3,681,603
93 3,681,604
206 3,681,605
213VT 3,681,606
222R 3,681,607
231R 3,681,608

CLASS 251

86 3,680,830
134 3,680,831
282 3,680,832
283 3,680,833

CLASS 252

8.55C 3,681,240
8.75 3,681,241
8.8 3,681,244
41 3,681,242
51.5A 3,681,247
62.1 3,681,243
62.55 3,681,245
88 3,681,246
89 3,681,248
106 3,681,249
158 3,681,250
162 3,681,251
301.2R 3,681,252
307 3,681,253
311 3,681,254
408 3,681,255
429A 3,681,256
430 3,681,257
437 3,681,258
448 3,681,259
465 3,681,260
514 3,681,261
520 3,681,262
522 3,681,263
526 3,681,264

CLASS 254

25 3,680,834
29R 3,680,835
86R 3,680,836
89H 3,680,837
131 3,680,838
175.5 3,680,839
192 3,680,840

CLASS 259

1R 3,680,841
1 3,680,842
64 3,680,843

CLASS 260

2P 3,681,265
2S 3,681,266
2.3 3,681,268
2.5AC 3,681,271
3,681,272
2.5AJ 3,681,273
2.5B 3,681,269
2.5P 3,681,270
17.3R 3,681,274
23R 3,681,275
23.7M 3,681,278
23.7R 3,681,276
24 3,681,277
33.6AQ 3,681,279
41 3,681,280
45.8N Re.27,451
3,681,281
46.5E 3,681,282
47CP 3,681,284
47ET 3,681,285
67FA 3,681,286
3,681,287
72.5 3,681,297
77.5AM 3,681,290
77.5AQ 3,681,291
77.5CR 3,681,289
77.5NC 3,681,288
3,681,292
78P 3,681,293
3,681,294
3,681,295
3,681,296
78.5R 3,681,298
79 3,681,299
3,681,301
79.5B 3,681,303
80.7 3,681,307
80.78 3,681,300
3,681,302
3,681,305
3,681,306
3,681,308
3,681,309
83.7 3,681,304
85.5R 3,681,310
85.5 3,681,311
86.1E 3,681,312
86.7 3,681,313
89.5H 3,681,314
94.3 3,681,315
94.9GA 3,681,316
94.9B 3,681,317
124A 3,681,318
156 3,681,319
175 3,681,320
210E 3,681,322
3,681,323
3,681,325
3,681,326
210R 3,681,321
3,681,324
239BD 3,681,340
239BE 3,681,339
239.1 3,681,342
239.3D 3,681,341
239.3T 3,681,343
239.55D 3,681,338
239.57 3,681,344
240TC 3,681,346
240.2 3,681,345
242 3,681,347
243C 3,681,328
243R 3,681,327
244R 3,681,329
3,681,330
3,681,333
247.5R 3,681,331
3,681,336
3,681,379
248AS 3,681,334
248CS 3,681,332
249.8 3,681,335
3,681,337
3,681,348
251A 3,681,350
251R 3,681,349
256.5R 3,681,351
260 3,681,352
267 3,681,353
268BC 3,681,359
268PE 3,681,355
268TR 3,681,354
3,681,357
268S 3,681,356
268 3,681,358
279R 3,681,360
293.53 3,681,362
3,681,363
293.64 3,681,364
293.8 3,681,361
293.82 3,681,365
295AM 3,681,367
295T 3,681,368
295.5B 3,681,366
296H 3,681,369
306 3,681,371
306.7 3,681,370
3,681,380
307H 3,681,372
308R 3,681,373
3,681,374
309 3,681,375
309.2 3,681,376
309.5 3,681,377
3,681,378
310A 3,681,383
310C 3,681,382
310 3,681,381
325 3,681,384
326.5FN 3,681,387
326.5B 3,681,388
327E 3,681,385
327M 3,681,386
332.2C 3,681,389
333 3,681,391
335 3,681,390
3,681,392
340.5 3,681,393
340.9 3,681,394
343 3,681,395
3,681,396
343.2R 3,681,397
343.5 3,681,398
343.9 3,681,267
346.4 3,681,399
349 3,681,400
373 3,681,402
396R 3,681,401
3,681,403
397.1 3,681,407
397.3 3,681,405
3,681,410
397.4 3,681,404
3,681,408
3,681,411
397.45 3,681,409
397.7 3,681,406
403 3,681,412
404.5 3,681,413
408 3,681,414
410.9R 3,681,415
429J 3,681,416
430 3,681,417
433 3,681,419
448.2B 3,681,418
448.8R 3,681,420
453R 3,681,422
456R 3,681,423
460 3,681,424
465E 3,681,425
465.3 3,681,421
468.5 3,681,427
469 3,681,428
470 3,681,433
471C 3,681,426
471R 3,681,429
472 3,681,430
473F 3,681,432
473S 3,681,431
475SC 3,681,435
475B 3,681,434
479R 3,681,436
3,681,437
486R 3,681,438
487 3,681,439
488J 3,681,440
501.15 3,681,441
505A 3,681,442
505P 3,681,443
515R 3,681,444
520 3,681,445
524R 3,681,446
533C 3,681,447
543P 3,681,448
544A 3,681,449
544M 3,681,450
3,681,451
3,681,452
3,681,453
3,681,454
545R 3,681,455
552R 3,681,456
553R 3,681,457
559S 3,681,458
565 3,681,459
566A 3,681,460
570.8TC 3,681,461
584C 3,681,462
584R 3,681,463
586R 3,681,464
604HF 3,681,465
617A 3,681,466
623R 3,681,467
633 3,681,468
652.5R 3,681,469
666PY 3,681,470
681 3,681,471
836 3,681,472
857TW 3,681,473
876B 3,681,474
876R 3,681,475
926 3,681,476
927R 3,681,477
944 3,681,478
3,681,479
3,681,480
970 3,681,481
989 3,681,482

CLASS 261

37 3,680,845
51 3,680,846
91 3,680,847

CLASS 263

6C 3,680,848

CLASS 264

1 3,681,483
34 3,681,484
47 3,681,485
89 3,681,486
109 3,681,487
176 3,681,488
307 3,681,489

CLASS 266

27 3,680,849

CLASS 267

54 3,680,850
140 3,680,851

CLASS 270

62 3,680,852

CLASS 271

3 3,680,853
32 3,680,854
41 3,680,855
44R 3,680,856

CLASS 272

22 3,680,859
52 3,680,857
83R 3,680,858

CLASS 273

32R 3,680,860
55R 3,680,861
3,680,862
101 3,680,863
110 3,680,864
134AE 3,680,865
137D 3,680,866
138R 3,680,867
174 3,680,868
183B 3,680,869
194R 3,680,870

CLASS 274

4D 3,680,871
39B 3,680,872

CLASS 277

9 3,680,873
153 3,680,874
171 3,680,875

CLASS 279

5 3,680,876
62 3,680,877

CLASS 280

6H 3,680,878
7.16 3,680,879
43.17 3,680,880
47.25 3,680,889
96.2R 3,680,881
124A 3,680,887
124R 3,680,888
150AB 3,680,884
3,680,886
150SB 3,680,883
150R 3,680,882
3,680,885
432 3,680,890
446B 3,680,891
489 3,680,892

CLASS 285

39 3,680,893
112 3,680,894
167 3,680,895
177 3,680,896

CLASS 287

20R 3,680,897
20.92D 3,680,898
3,680,899
93 3,680,900

CLASS 290

200 3,681,609

CLASS 292

36 3,680,901
341.14 3,680,902

CLASS 293

71R 3,680,903

CLASS 294

19 3,680,904
31.2 3,680,905
89 3,680,906
103CG 3,680,907

CLASS 296

23R 3,680,908
23 3,680,909
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